Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 88 February 22, 1930 No. 8

In this Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

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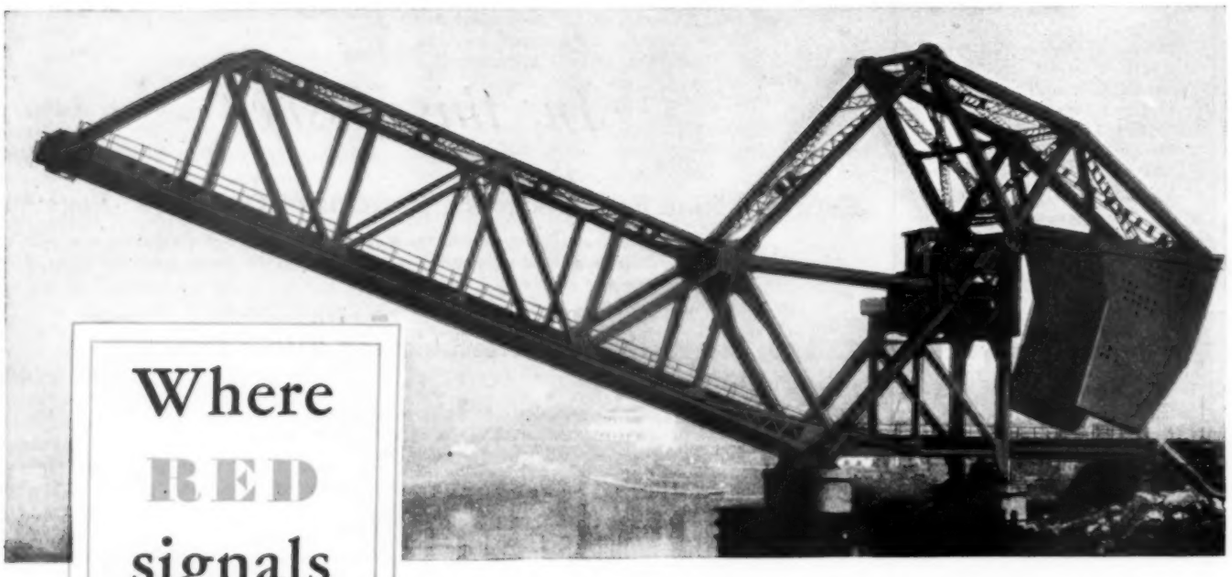

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Railway Age

Vol. 88, No. 8 February 22, 1930

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Railway Earnings in 1929

WHAT did the railways earn in 1929? Information regarding the earnings of the Class I roads in the entire year was made public by the Bureau of Railway Economics this week, but it must be analyzed before such comparisons can be made between it and the results obtained in earlier years as will show just how well relatively the roads did last year, and the effects upon their net return produced by prevailing trends in the railroad industry. In both the total earnings and the net operating income as reported by the Bureau of Railway Economics there is included about $37,600,000 of compensation for carrying the mails which was earned in previous years. On this basis the bureau reports that the average rate of return earned by the Class I roads on their property investment was 4.95 per cent. This compares with 5.13 per cent in 1926; 4.38 per cent in 1927, and 4.72 per cent in 1928. But when the back mail pay included in last year's earnings is credited proportionately to the earnings of the years in which it should have been paid the average return earned in 1929 is found to have been 4.80 per cent, as compared with 5.19 per cent in 1926; 4.44 per cent in 1927, and 4.75 per cent in 1928.

The year 1926 still ranks as the most prosperous the railways have had since the war. They did better in the first half of 1929 than in the first half of 1926, but their net operating income declined so rapidly in the second half of 1929 that in the entire year it not only yielded a smaller return on the investment than in 1926, but only a slightly larger return than in 1928. In an accompanying table are given comparative statistics for 1926 and 1929. In the upper half of the table all the back mail pay received last year is included in the total earnings and net operating income of 1929. In the lower half of the table the back mail pay is excluded from the figures for 1929 and is included in the figures for 1926 to the extent to which it should have been credited to that year.

Table I—Earnings and Operating Expenses of Class I Roads in 1926 and 1929

(a) Back mail pay included in 1929

	1929	1926	Increase, 1929 over 1926
Operating revenues	$6,352,354,834	$6,465,295,348	d.$112,940,514
Operating expenses	4,553,968,834	4,728,548,331	d.174,579,497
Taxes	402,630,307	395,197,043	7,433,264
Net	1,274,774,188	1,233,003,087	41,771,101
Operating ratio	71.69%	73.14%	.....
Rate of return	4.95%	5.13%	.....

(b) Mail pay included for 1926 and 1929 as earned

Operating revenues	$6,314,754,834	$6,479,734,171	d.$164,979,337
Operating expenses	4,553,968,834	4,728,548,331	d.174,579,497
Taxes	402,630,307	395,197,043	7,433,264
Net	1,237,174,188	1,247,441,910	d.10,267,722
Operating ratio	72.12%	72.97%	.....
Rate of return	4.80%	5.19%	.....

Decline of Total Earnings

Operating expenses, which, of course, were not affected by back mail pay, were almost $174,600,000 less than in 1926, although, meantime, considerable advances in wages were made. Taxes increased more than $7,400,000. This illustrates the constant tendency of increases in taxes partly to nullify the effects of economies in operation. Even when all the back mail pay is included in the figures for 1929, total earnings show a decline since 1926 of almost $113,000,000, while when mail pay is credited to 1926 and 1929 as it was actually earned, total earnings in 1929 are found to have been about $165,000,000 less than in 1926. This decline in total earnings was due to loss of passenger earnings, which were about $170,400,000 less than in 1926, and the decline in which more than offset the gain in freight earnings. When all the back mail pay is included in the earnings for 1929 the net operating income reported is almost $41,800,000 larger than that reported for 1926, but when mail pay is credited to the two years as it was earned the net operating income actually earned in 1929 is found to have been almost $10,300,000 less than was actually earned in 1926.

The average return of 4.80 per cent on property investment for 1929, arrived at by excluding back mail pay from the earnings of last year, is the true measure of the ability of the railways to earn return on the basis of last year's traffic, rates and operating costs. It is by no means a satisfactory figure. The net operating income earned in 1926 was not a fair return, measured by any standard ever accepted by any federal court or economist of standing, and yet, in spite of the large operating economies since effected, the return earned in 1929, a year of record-breaking freight business, was substantially less. And now the railways have entered a year in which, at the urgent request of the national administration, they are going ahead with a large pro-

gram of improvements, but with prospects of earnings less encouraging than they were a year ago.

Reasons for Prevailing Tendencies

There is no difficulty in telling why tendencies in the railroad industry are comparatively unsatisfactory, or why they are not more unsatisfactory. The various governments constantly increase their taxes, regardless of the tendency of earnings. Passenger business continues to be lost, mainly to private automobiles, but in considerable measure to common carriers on the highways that are not taxed and regulated in the same general way that the railways are. Freight traffic does not grow as it did before the war, and there is a nation-wide movement for the development of inland waterways which would divert from the railways a large part of the freight that otherwise would be carried by them.

The other side of the picture consists of the large economies in operation the railways are continuing to make, but the facts show that, as large as these economies have been, they have not been sufficient since 1926 to offset the effects of increased taxes, loss of passenger business and advances in wages. It has become so generally believed that the railways are prosperous that no concern about the future of their earnings and service is being manifested by either business men or public men. On the contrary, it seems to be quite generally assumed that there is no limit to the increases in taxes and wages and the losses of traffic to government-aided means of transportation that they can stand. The tendencies in the railroad industry indicated by comparisons of their total earnings and net operating income in 1926 and 1929, both of which were years of record freight business, are not such as to justify this unintelligent optimism.

The general tendency of net operating income should be upward until the railways can, on the average, earn a fair return over periods of years; but it is by no means certain that its general tendency is upward, when the return earned in such a year as 1929 is only 4.80 per cent.

It is Economy to Start Now

WITHIN recent years the railways have made much progress in certain directions in stabilizing their forces throughout the year. In particular, many of them have found that they can relay their rail to advantage during the winter and thereby get this task out of the way of the distinctly seasonal work of the summer. The extent to which this change in working program has been brought about is shown best by the large volume of rail orders now placed in November and December of each year as compared with the practice a decade ago.

To some extent other work is also carried on during the winter to a greater extent than heretofore—particularly such programs as interior painting and some building construction. In general, however, the railways have made less progress in extending their construction activities throughout the winter than a number of other industries. This has been particularly pronounced during the present winter.

The railways are facing a large improvement program this year, the figures which they submitted to President Hoover last fall exceeding those of last year, which was in itself one of activity, by more than 25 per cent. Budgets of individual roads which have since been announced support this figure and assure that the year will be a most active one for construction and maintenance forces. Facing such prospects, it is the part of prudence for the roads to get this work started as early in the season as practicable in order that they may complete it and secure the benefit from the improvements at an early date. Furthermore, it is now possible to purchase materials at lower prices than later in the year, while labor of better than normal efficiency is also available in ample quantity. With the large volume of highway and other construction work that will be undertaken as the season develops it is not to be expected that the present favorable conditions as to labor and materials will prevail indefinitely. That work which is so planned as to start at the earliest practicable date will, therefore, be done most economically.

De Luxe Coach Trains

WHEN certain passenger traffic officers were casting about for means of increasing day-coach travel, they hit upon the idea of operating solid day-coach trains, stressing the factors of speed and comfort. It was in these factors, they felt, that railway travel offered more advantages than other means of transportation. The first experiments along these lines were successful. Accordingly over a period of seven or eight years the practice has grown until as many as six such trains have been in regular operation.

In general, the equipment on all of these trains has been the same—observation cars available without extra charge, dining cars, and unusually comfortable coaches. In the matter of speed, too, these trains are alike, in that their schedules compare favorably with those of other trains operating between the same points, and, in one case, at least, the schedule of the coach train is considerably shorter than that of any other train.

The coach trains afford a widespread test of their efficiency, since two of them have been operated along the Pacific coast, two in the east, and two in the middle west, so that the question of geographical location in

itself seems to be relatively unimportant. In the matter of the type of passengers handled, they vary widely. Some handle tourists, some "trippers" to seacoast and inland resorts, and one derives its principal traffic from migratory agricultural workers. In the latter case, a reduction in fare of about 40 per cent is made, but, in all the other cases the standard fare is charged.

It is interesting to note that each of the railroads involved advises definitely that the operation of these trains has not taken day-coach or Pullman business away from the other trains between the same points. In every case, such business as has been developed, has come from other means of travel, and none of the railways feels that, in the operation of these trains, it is competing with itself.

Four of these six trains have proved highly successful, one being described as "the best-paying train on the railroad." Another train, which has been in operation about a year, is attracting sufficient traffic to warrant its continuance until such time as its success or failure can be demonstrated more clearly. The sixth train was taken off after about six months' operation, because it was not a paying proposition, and gave no indication of becoming one.

With this record of coach train operation, under widely varying conditions, an increasing number of passenger traffic officers are now investigating the possibilities on their own lines. The idea is certainly worthy of attention, and should not be discarded as unpractical unless careful consideration of the individual problem leads to that conclusion.

Adding Experience to Work Train Operation

WORK trains, as a costly, and yet necessary, adjunct to many types of construction and maintenance of way work, have properly been the subject of much discussion during the last few years. As a result, many roads have effected remarkable reductions in work train costs. In most cases these reductions have been effected through one of two principal ways. One of these has been the elimination of work trains by the use of more economical means of transporting materials and supplies. The other has been the more intelligent and intensive use of work trains. The second method has been given far less attention than it warrants. This is true particularly in connection with large-scale operations, such as ballasting and multiple main track construction, where a number of work trains are usually required.

The average supervisory engineering or maintenance officer in charge of field work where only a few work trains are necessary, should be able to, and usually can, schedule the details of his work and, at the same time, direct the movements of the work trains so as to secure the maximum service from them. As the scope of the work and the number of work trains involved increase, however, regardless of the ability of the officer and the closeness of the long range co-operation with the operating department, efficiency usually decreases, both as regards the conduct of the work itself and the handling of the work trains.

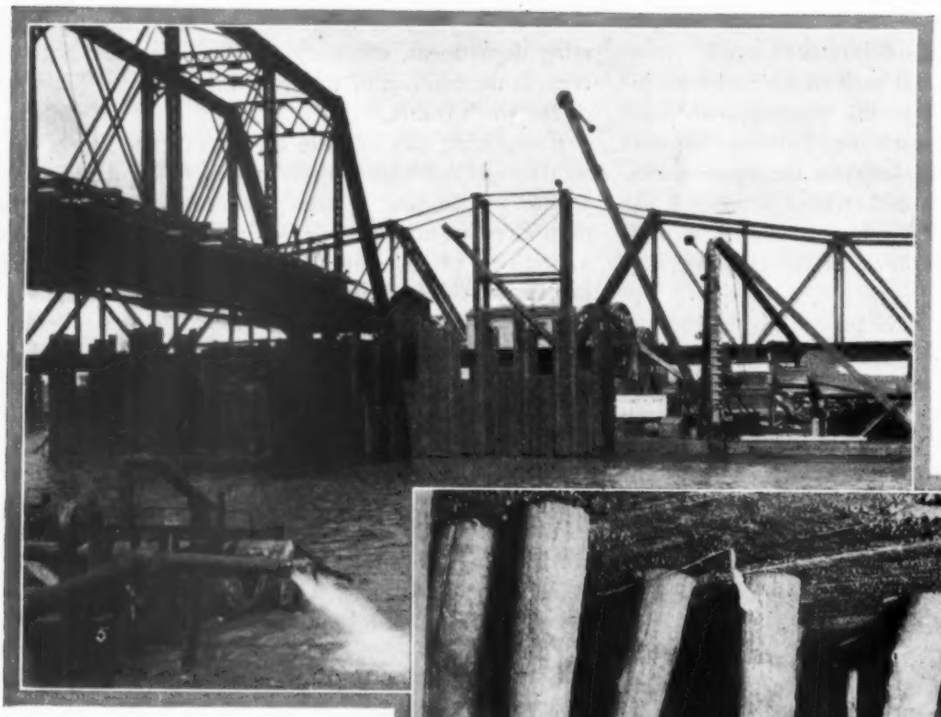
Recognizing this and the futility of expecting a construction or maintenance officer, already loaded with responsibility, to direct a large group of work trains in the most effective manner, a New England road has created a new field officer—an engineering trainmaster, reporting to the chief engineer, to direct the movements of work trains on large pieces of work. This new officer was first assigned to a large second track project where seven or eight work trains were constantly in operation, and almost immediately, a marked reduction was effected in work train expenses, while at the same time, the daily production of each train was increased. During the second week that the trainmaster was in charge of the work trains there was a reduction of $265 in the work train payroll, as a direct result of innovations which he put into effect. Unnecessary overtime was reduced, while on the other hand a certain amount of overtime was recommended on certain days to preclude much larger expense the following days. The third week that the trainmaster was on the work, one work train handled 749 car loads of material for a second-track fill, whereas 497 cars was the largest number which had been handled previously in any week. Similar but less marked improvement was shown in the performance of the other work trains.

Continuing in this capacity, the engineering trainmaster had an average of ten work trains under his jurisdiction on one large maintenance project and, according to the supervisory officers in charge of the work, his services proved of immeasurable benefit in reducing the expense of the work trains and in speeding up the work. Even without such concrete examples of expedited work train service and actual savings, the assignment of a skilled operating department man to large engineering and maintenance of way projects where many work train movements are involved should appear feasible and desirable. With supporting evidence of its effectiveness, this method of reducing work train expense should appeal to many other railway officers as worthy of the most careful consideration.

Indexes to Volume 87

THE indexes to the last volume of the *Railway Age*, July to December, 1929, are now ready for distribution. Those desiring copies should advise the New York Office, 30 Church Street.

Excavate Nine Feet Under th



A Remarkable Construction Picture

The view reproduced below depicts the condition disclosed under Pier 6 after the excavation had been completed for underpinning it. The roof of the chamber is the bottom of the grillage, while the floor is covered with the rail reinforcement for the new subfooting. The inclined position of the piles is the result of the collision with a steamer which pushed the pier bodily on the piles a distance of 9½ ft. The view at the left shows conditions above water at the same pier.

PRESENT-DAY foundation practices were shown in sharp contrast with those of a generation ago in the underpinning of the lower Maumee River bridge of the Toledo Terminal Railway during the course of a project for the replacement of the superstructure and the general strengthening of the substructure. Open cofferdams resisting hydrostatic heads of as much as 33 ft., were necessary for the underpinning of the piers, the excavation for the new subfootings being carried down to a maximum of 9 ft. 4 in. below the tops of the piles upon which the old piers previously rested.

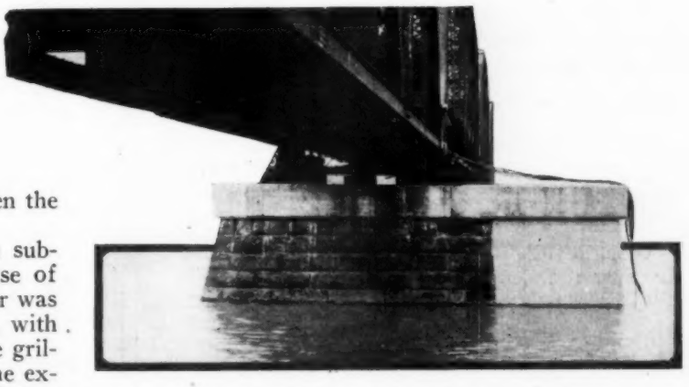
The Toledo Terminal Railway, which is owned jointly by nine railways entering the Toledo area, is the successor to the Toledo Railway & Terminal Company which was organized in 1901. In 1903 the older company built a seven-span steel bridge with timber approaches across the Maumee river near its outlet into Lake Erie. The eight sandstone piers, which serve as the intermediate supports for the superstructure, were carried on piles cut off at what was then approximately stream bed level, wooden grillages being provided to distribute the load to the piles. The original superstructure was built for single track as were the shafts of the piers, but the pile foundations, grillages and pier masonry work to the waterline were built with extensions for a second track. However, when it was planned about two years ago to renew the superstructure with spans for double track, the pier foundation conditions were such as to require extensive reconstruction of the piers before work could proceed with the second-tracking program.

River Bed Subject to Scour

During the intervening years since the bridge had been built, considerable scour had taken place across practically the entire width of the river, with the result that the level of solid river bottom was actually below the level of the bottoms of the pier grillages. At four of the piers, a layer of soft silt from four to five feet thick surrounded the grillages and the tops of the foundation piles, so that the sandy bed of the river was from three to four feet below the tops of the piles. At the other four piers, the clay bottom was from 4½ to 10½ ft. below the bottoms of the grillages and even the top of the silt did not reach up to the timber work

the Bottoms of Old Piers

Work on Toledo Terminal bridge shows advance in foundation practices



The Piers Were Extended for Second Track

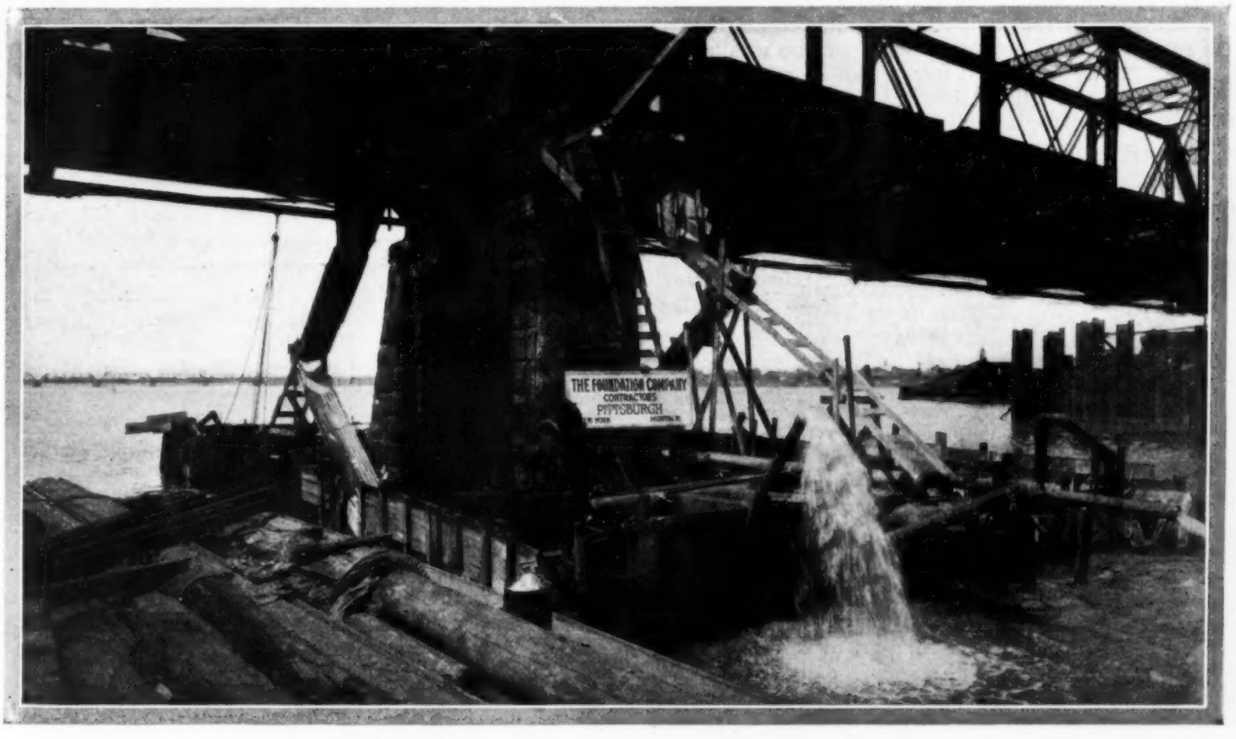
so that it was possible for a diver to walk between the piles supporting one or more of the piers.

In addition to this condition, one unit of the substructure, Pier 6, needed special attention because of an accident which had occurred in 1911. This pier was struck at its downstream end by a lake steamer, with the result that it was pushed upstream 9½ ft., the grillage sliding on the tops of the piles. Owing to the excess length of the pier footing provided for future second track, no especial difficulty was experienced in providing support for the two spans carried on this pier, but it was discovered later that the accident had resulted in the breaking off of a number of the foundation piles. In view of these conditions, it was decided to underpin all of the piers by the construction of subfootings carried to a level well below any anticipated depth of scour, and to provide additional pile support for these subfootings.

One Span Added to Superstructure

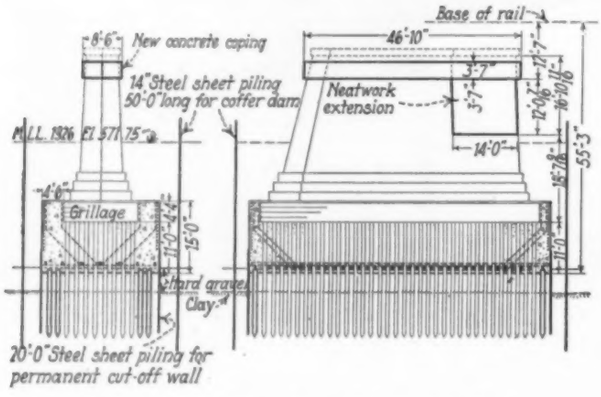
As previously stated, the bridge consisted of seven spans. Before reconstruction, these comprised from west to east, one 40-ft. deck-plate girder span, three through truss spans 204 ft. 8 in. long, a swing span 353 ft. 4½ in. long, two truss spans 152 ft. 4½ in. long and three panels of pile trestle at the east end. As the west end of the deck girder span was supported on a pile pier and there was a trestle approach at the east end of the structure, there were no abutments. The eight stone masonry piers varied in height from 28 ft. to 42 ft. 9 in. from the tops of the bridge seats to the bottoms of the grillages, and the amount of submergence of the pier bottoms varied from 8 ft. to 23 ft. below mean lake level.

The river bottom consists of clay covered with cemented gravel and sand, but in the deepest portion of the stream all of the overburden of sand had been eroded, so that here clay is encountered directly below the four-foot deposit of silt that covers the river bed nearly everywhere from bank to bank.



Large Pumps Were Used in Unwatering the Cofferdams

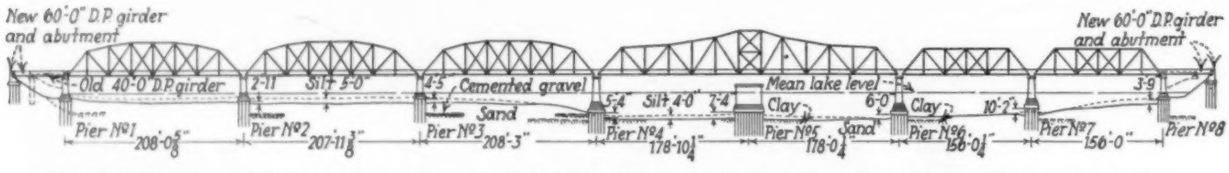
Therefore, in addition to a new superstructure for double track, including a new 60-ft. deck girder span at each end, the project included the following substructure work: Two new abutments, the extension of the neatwork of all piers for a double-track structure, the riprapping of Pier 1 and the underpinning of Pier 8 with a concrete footing protected by Wakefield sheet piling, and the underpinning of the other piers by concrete footings having extensions beyond the lines of the



End and Side Elevations of a Typical Pier

old footings of sufficient size to permit the addition of a considerable number of new piles. It was also necessary to remove several courses from the tops of the old piers and provide new concrete copings to accommodate the new superstructure.

The new underfootings were reinforced at the bottoms with grillages of rails laid both longitudinally and transversely between the piles and with diagonal shear bars designed to aid in transferring part of the load to the new piles. In addition, one-inch horizontal bars, eight inches center to center, were carried entirely around the new footing close to the four sides. Foundation pile tests indicated that 40 tons could be allowed as the safe load per pile, but in design the load per pile was limited to 20 tons. The piles used were from 20 to 40 ft. long, with an average length of about 25 ft. The plans for the piers also called for a cutoff wall, composed of 14-in., 42.6-lb., Lackawanna sheet piling, 14 ft. long, driven



General Elevation of the Bridge Showing the Relation of Pier Bottoms to the River Bottom Before the Footings Were Underpinned

flush with the neat lines of the footings as a precaution against scour around the foundation piles. The bottoms of the footings extended to various depths below water level, this depth being 15 ft. for Piers 2 and 3, 29 ft. for Pier 5, 31 ft. for Pier 7, and 33 ft. for Piers 4 and 6.

Work Done Under Traffic

A study of a traffic chart for part of May and all of July and September, 1927, showing daily train movements by hours, led to the conclusion that there was no period during the day when traffic could be suspended to aid construction without interference with train movements. The train movements during the period of construction ranged from 63 to 86 per day. Work on the piers could be conducted without interference with water traffic except on the pivot pier, and arrangements were made to do this work in mid-winter, when river traffic had stopped for the season.

The foundations were unwatered by constructing cofferdams of 14-in. 40.6-lb., Lackawanna arch-web sheet piling to a maximum length of 50 ft. In work on the first pier, Pier 7, the cofferdam was constructed first, followed by the sheet-pile cutoff wall, with the result that the driving of foundation piles had the effect of a slight lifting of the pier. For this reason, the procedure was changed at the other piers, so that the foundation piles were driven before the cutoff wall was built. All foundation piles were driven in the cofferdams after the piers were unwatered. There was sufficient headroom under the bottom chords of the truss spans to permit the placing of the sheet piles in a vertical position on the river bed before driving, but not enough to permit one pile to be slipped into the adjacent one for interlocking. Accordingly, the sheet piles to be placed directly under the spans were held in an inclined position in a vertical plane transverse with the center line of the bridge, while being interlocked until enough had been assembled to provide a width greater than that of the superstructure. They were then righted so that the driving could be started. The foundation and sheet piling were all driven with floating pile-driving equipment. The foundation piles were driven practically to refusal. The sheet piling was used as many as four times during the course of the work.

Used Large Pumping Units

The contractor erected a compressor plant at the west end of the bridge and laid a compressed air line across the bridge, commencing with eight-inch pipe and reducing it successively to six-inch and four-inch. This was provided to supply air for stone cutting and drilling, the operation of pile hammers and also for the operation of pumps. For unwatering the cofferdams dependence was placed mainly on two air-driven 14-in. centrifugal pumps; a smaller electric pump being employed to remove subsequent seepage. The dumping of cinders outside the cofferdams proved the most effective aid in reducing seepage under the cofferdams. The timber frames for the cofferdams were carefully designed and built and withstood the maximum head without distortion.

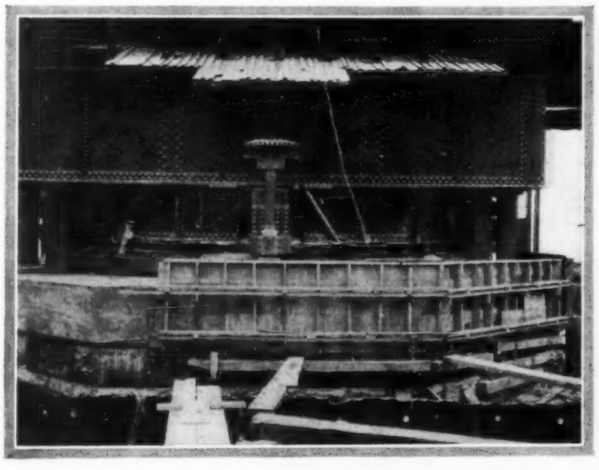
The silt, sand and clay were excavated down to the determined footing elevation, including the area surrounding the piles under the old footings. The concrete was mixed in plants erected west and east of the bridge. These were equipped with Blaw-Knox batchers and sand inundators, all concrete being proportioned in accordance with the water-cement ratio, with a saving of about 1,000 barrels of cement, as compared with the original estimate which had been based on the yardage of concrete required.

Considerable thought was given to ways of getting

an effective bearing of the new concrete against the underside of the old grillages. The concrete was extended up around the old grillages to a level with their tops, or a distance of 4 ft. 4 in. But with concrete of the consistency used, this did not assure a hydrostatic pressure which could be assumed to be effective for any appreciable distance back from the edges of the old grillages, so resort was had to grouting and grout was forced in under a pressure of 90 lbs. per sq. in. at three points on each side of the piers and at the center of each end.

Special Work on the Pivot Pier

The pivot Pier, Pier Five, presented a somewhat different problem. This pier, as built, was ostensibly of adequate dimensions for a double track superstructure, having been located with its centerline downstream from the center of the single track superstructure for this purpose. However, upon checking it against the requirements of the double-track superstructure, it was found that the pier was off center from the center line of double track by one foot. To compensate for this, the neatwork was extended two feet on the downstream side and the new coping extended to cover this addition to the neatwork.



A Part View of the Work on the Coping of the Pivot Pier

The requirements of added pile-bearing power for this pier were complicated by the fact that the permissible extension of the footings on the two sides facing the waterway channels was restricted to an amount which allowed room for only one row of piles on each side. Accordingly, the footing was lengthened to allow for two rows of piles at each end and was made rectangular instead of octagonal to permit the addition of piles in the four corners.

The work was handled without accident to the structure and without delaying trains, except that arrangement was made to hold traffic off the bridge on several occasions, for intervals not exceeding two hours, while the spans were being blocked up for the alteration of the copings.

The substructure work was done under contract by the Foundation Company, New York. The superstructure was fabricated and erected on falsework by the American Bridge Company. The work was supervised for the railway by F. J. Bishop, engineer of signals, bridges and buildings of the Toledo Terminal Railroad, H. Ibsen, consulting engineer, Michigan Central, Detroit, Mich., serving as consulting engineer.

Wabash Working on System Plan

WASHINGTON, D. C.

THE Wabash is engaged in negotiations directed toward a realization, as nearly as may be, of the fifth eastern trunk line system proposed for it in the Interstate Commerce Commission's consolidation plan, according to a letter from W. H. Williams, chairman of the board of the Wabash, to C. D. Mahaffie, director of the Bureau of Finance of the Interstate Commerce Commission. The letter was in reply to the suggestion made by Mr. Mahaffie to the four companies that filed extensive unification plans last year, that the applications be withdrawn because they are not in complete accord with the commission's plan and do not propose specific terms and conditions on which the commission could act. Mr. Mahaffie did not say the applications would be dismissed but that in his opinion hearings on them in their present form would be useless, and he asked each road to express its views before recommending to the commission that they be dismissed.

Mr. Williams objected to the suggestion that his application be withdrawn and asked that it be retained on the docket until it can be appropriately amended or supplemented.

"It is the purpose of the Wabash," he said, "to continue negotiations already begun and designed to effect the grouping prescribed by the commission and to amend and supplement its application as promptly as necessary negotiation and development may admit, in order to fully meet the requirements of the commission in the statement of terms and conditions upon which appropriate acquisitions and their approval by the commission are sought."

Mr. Williams called attention to the fact that the plan proposed by the application had been approved by various interests that had filed interventions in the case and that its plan for a fifth eastern system had now been "substantially approved (in even extended scope) by the final plan of the commission," which allocated to the Wabash all the major railroads included in its application, but that the final plan itself is not inflexible. He said he thought it highly desirable that the application hold its place on the docket with a view to its amendment so as to include consideration for and terms and conditions of proposed acquisitions developing from the negotiations now in progress. "Of course, in the very nature of things," he said, "these negotiations must take an unhurried course and reach a much further advanced stage before the Wabash application can be appropriately supplemented or amended."

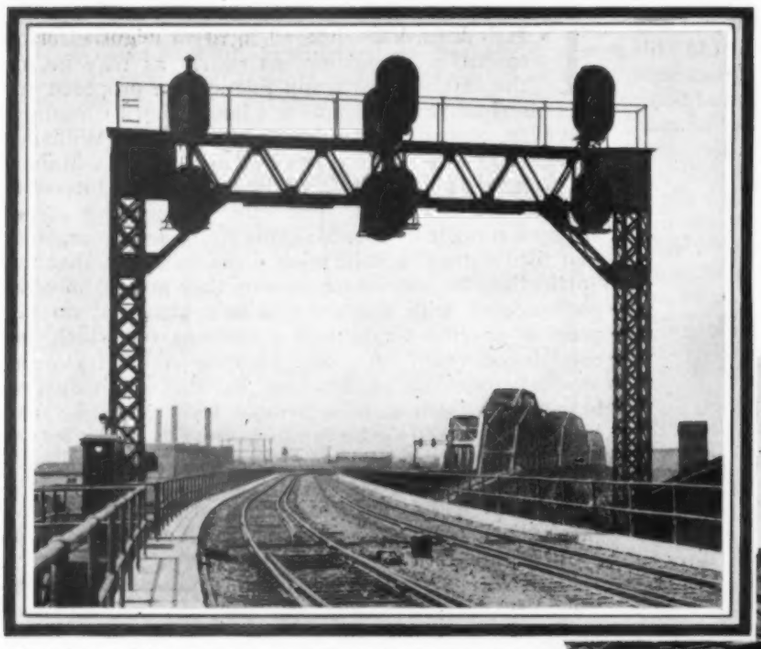
H. T. Newcomb, general counsel of the Delaware & Hudson, replied to Mr. Mahaffie's letter urging that no premature action be taken as to the D. & H. application for authority for the formation of an Atlantic seaboard terminal system, on the ground that the effect of the commission's plan upon the pending applications "presents several questions which seem to require careful examination." He promised to advise the commission as soon as practicable, what, if any, action should in his view be taken with regard to the application.

Herbert Fitzpatrick, vice-president and general counsel of the Chesapeake & Ohio, asked that the application be held in suspense until he could come to Washington and discuss the situation with Director Mahaffie.

R. Marsden Smith, general attorney of the Baltimore & Ohio, said that the subject would be taken up at the earliest possible moment.

C. & O. Installs New Interlocking and Either-Direction Signaling

Four-mile section from Newport, Ky., to Cincinnati, Ohio, includes a new bridge



Signal Bridge in Covington Looking Toward Ohio River Bridge

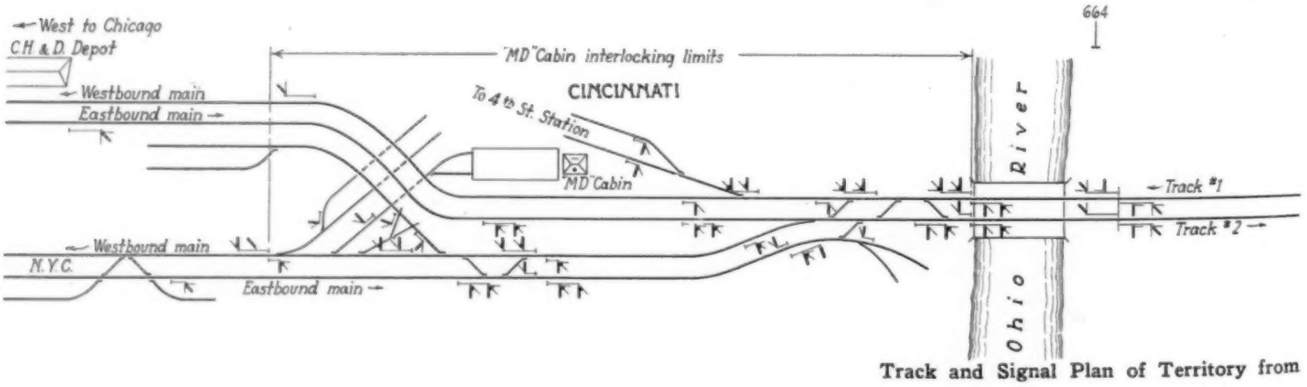
"KC" Junction Looking West

By C. A. Taylor

Superintendent of Telegraph and Signals, Chesapeake & Ohio

TRAINS are now directed in either direction by signal indications, without written train orders, on a four-mile section of double-track railroad on the Chesapeake & Ohio between Cincinnati, Ohio and Covington, Ky. To permit this, three new electro-pneumatic interlockers were built and one mechanical interlocker was converted to electro-mechanical in this district, which embraces a new double-track bridge across the Ohio river and an extensive four-track elevation project through Covington which lies on the south side of the Ohio river across from Cincinnati.

The old bridge was built in 1886-1888 and is owned by a subsidiary of the Chesapeake & Ohio, whose property not only includes the approach tracks on the Kentucky side to Saratoga Alley in Covington, a distance of about 3,600 ft. east of the river bank, but serves also as a terminal ownership company from Cincinnati to "KC" Junction where the Chesapeake & Ohio is joined by a line of the Louisville & Nashville. This route is used daily by about 23 passenger and express trains of the Chesapeake & Ohio and the Louisville & Nashville, all of which move across the bridge twice, because the engine terminals and coach yards of both roads are on the Kentucky side. Freight traffic is handled in transfer

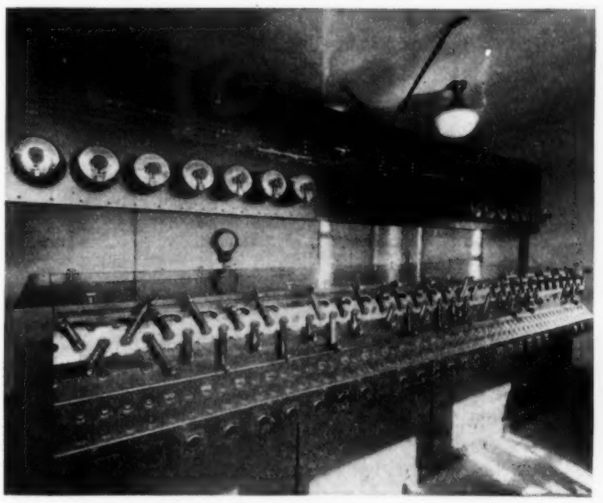


Track and Signal Plan of Territory from

trains, the number of which varies in number with the amount of traffic.

The old bridge was inadequate to carry locomotives weighing over 92 tons, which prevented the use of regular road engines over the bridge. As a result, freight transfers were sent over the bridge with small locomotives handling only about 30 to 35 cars each. During heavy traffic seasons, there were so many of these transfer trains that the track facilities were taxed to capacity and at times congested, thus causing serious delays. As the tracks were at grade, the delays to street traffic in Covington, Ky., were serious.

As the new construction program involved a new bridge, the tracks were elevated through Covington and two additional tracks were added to the double-track line from the east end of the east approach to the new bridge, eastward to "KC" Junction. The double-track line beyond "KC" Junction to Newport, was also reconstructed, the grade crossings being eliminated and additional cross-overs being installed. The main tracks through the entire territory were constructed of 100-lb. rail, and for the restricted-speed routes, No. 14 turnouts and crossovers were used.



Interlocking Machine at "KC" Junction

Interlocking Plants

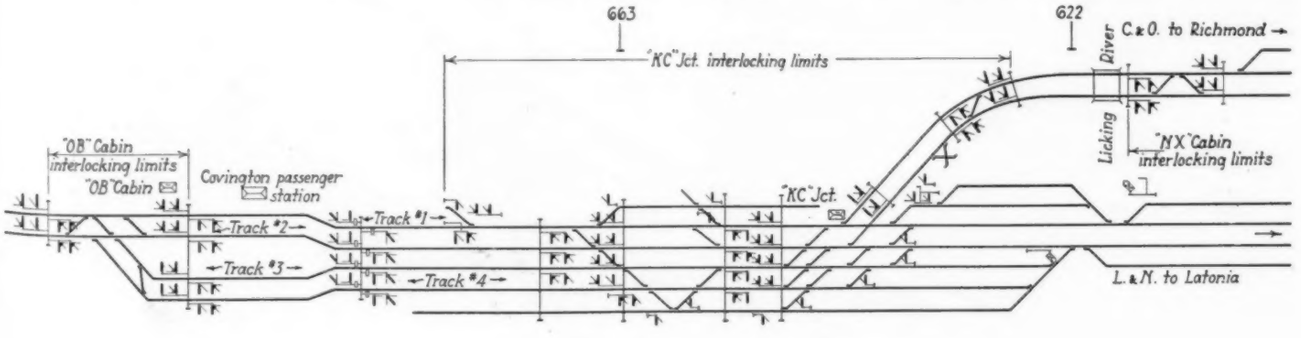
At Newport, "NX" Cabin, a single-track line of the L. & N. crosses the C. & O. double-track line at grade. The existing interlocking machine at this plant was converted from mechanical to electro-mechanical by adding Union Type-S-8 electric levers to the mechanical machine. The final layout consists of a 20-lever mechanical frame with 15 operating levers and 5 spare spaces, and 10 Type-S-8 electric levers. Three main-track crossovers, not formerly interlocked, two of which are located at the water column just east of Licking river about 3,000 ft. west of "NX" Cabin, are now interlocked and controlled from the interlocking machine and are operated by Union Style-M low-voltage, d-c. switch machines.

At "KC" Junction a new 59-lever electro-pneumatic interlocking was installed. This machine was installed on the third floor of a new three-story brick building, the lower floor of which is used as a yard office. Another new 23-lever electro-pneumatic interlocking machine was installed in a new two-story brick tower known as "OB" Cabin, located at the west end of the new four-track line near Sixth street, Covington, to handle the crossovers and switches in this vicinity.

On the Cincinnati side of the river, an obsolete 110-volt d-c. electric interlocking plant was replaced by a new electro-pneumatic plant consisting of a 51-lever machine with 30 operating levers. This new two-story brick tower, known as "MD" Cabin, is located at Rose street, Cincinnati, alongside of the double-track line of the Cincinnati Inter-Terminal, and the tower proper is supported by a three-story substructure of reinforced concrete, which was required in order to place the tower at the proper elevation with respect to the location of the main tracks on the new Inter-Terminal bridge structure. This plant handles the switches for tracks leading to the Union station, the C. & O. Fourth Street station, the Big Four yards and also to the Chicago division of the C. & O., along which are located the yard tracks used by the C. & O., the B. & O., and various interchange connections and industries in Cincinnati. One of the many interesting features of this plant is the fact that all but 8 of the 19 interlocked switches are located on an elevated steel structure, which is in some places over 50 ft. above the ground level.

Through Movements by Signal Indication

The new track layout includes crossovers to permit parallel movements within the limits of the interlocking plants, and thus provides maximum flexibility for handling crossover movements when diverting trains from one track to another in the entire territory between "NX" Cabin, Newport and "MD" Cabin, Cincinnati. The signaling between towers is controlled by traffic locking, signal indications being provided for directing train movements in either direction on all tracks. The bulletin covering the signal installation specifies that traffic on all main tracks between interlocking limits is reversible, that the current of traffic will be authorized by interlocking signals and that signal indications will supersede time-table superiority. All train movements



Cincinnati to "NX" Cabin, Newport

		Number plate						
NAME	Stop signal	Stop and proceed signal	Slow speed signal	Approach signal	Approach restricting signal	Clear restricting signal	Clear signal	Clear slow speed signal
INDICATION	Stop	Stop then proceed	Proceed at slow speed prepared to stop	Approach next signal prepared to stop	Approach next signal at restricted speed	Proceed at restricted speed	Proceed	Proceed at slow speed
RULE	601-A	501-AA	601-G	501-B 601-B	501-E 601-E	601-F	501-C 601-C	601-H

Green Yellow Red

Chart of Aspects and Indications of Signals

in this area are under the direction of the general yard master at Covington who outlines how the movements shall be handled through the entire district, in order that delays may be reduced to a minimum.

With the new bridge in service, large locomotives capable of handling as many as 125 cars are used for freight transfer trains in either direction. This reduces the number of trains, but increases the necessity for preventing stops, which requirement has been adequately met by the new facilities. The changing of motive power on inbound and outbound passenger trains, which was formerly necessary at Stevens Yard, 10 miles east of Newport, has also been eliminated and passenger train schedules were shortened accordingly.

Signals and Signal Aspects

The high signals are Style-R-2 color-light type with 8⅜-in. doublet lens. The interlocking signals are of the two-unit type, except the dwarf signals which are of the one-unit type, Style-N, with 5½-in. doublet lens. The automatic signals are of the one or two-unit type, the two-unit type being used only for distant indications governing the approach of trains to home interlocking signals, where a restricted-speed indication is displayed for crossover movements.

Eight signal aspects are given by the color-light signals in this installation. The signal indications, based upon the standard code of the A.R.A., are few in number, easy to understand and have been of great help to the trainmen in handling heavy traffic. Even with the more extensive track layout, the number of indications with the new system of signaling is no greater than with the old semaphore signaling previously in service.

Traffic Locking

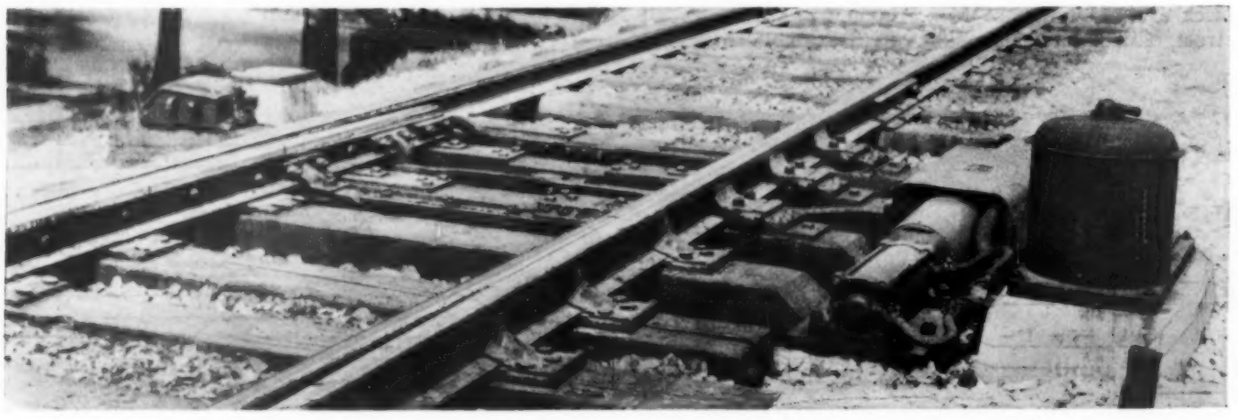
The Chesapeake & Ohio has developed an adequate traffic locking scheme for train operation in either direction by signal indication. A 28-volt, d-c. circuit requiring only two wires for separate control and return between towers for each track provides the following facilities:

(1) An audible and visual indication that an unlock is desired.
(2) A visual indication that conditions are such as to make it proper to reverse traffic.
(3) A locking circuit guarding against changing traffic except when, all track sections between towers are unoccupied, opposing signals in the stop position and levers mechanically locked.

Features of Interlockings

The interlockings throughout the entire district are provided with modern safety features, including complete approach locking for all high and restricted-speed signals, time locking for all-low speed and dwarf signals, and route and detector locking. "Call-on" signals are provided for directing the movement of trains into occupied blocks for following movement only.

The power interlockings are of the electro-pneumatic type, using the Union Model-14 interlocking machine and the Style A-1 switch layout with Style-C independently mounted switch valve. Illuminated track models are mounted over the interlocking machines, with white lamps in each track circuit burning when the track is clear, and with red approach and green traffic direction lights. Lever lights are mounted in lamp cases on the machine below the levers, white lights being used on signal levers indicating when the block is unoccupied, green lights on switch levers for detector lock indication, and white lights on traffic levers indicating when conditions are proper for reversing traffic. An additional feature, which has been standard practice on the Chesapeake & Ohio for several years, is the form of signal repeater lights which are mounted in the third



An Electro-Pneumatic Switch Machine Layout

row below the signal levers. These lights flash red when the levers are operated to display proceed signal indications, and remain red if the signal does not respond to the lever movement. When the signal resumes its most restrictive indication, following a train movement, the red light is illuminated and continues to burn until the lever has been returned to the normal position, thus providing an indication of considerable value to the leverman in guarding against failure properly to restore signal levers after train movements have been completed.

Construction

All plans and specifications were developed in the office of the superintendent of telegraph and signals and the construction work was performed by C. & O. railway forces, with the exception of the construction of the towers, which work was contracted. The signal and interlocking project was executed under the immediate supervision of D. K. Roll, supervisor of signal construction, reporting direct to the superintendent of telegraph and signals.

Report Submitted on Mississippi Project

WASHINGTON, D. C.

THE Secretary of War on February 15 transmitted to Congress a report by the chief of engineers, Major General Lyle Brown, on a partial survey of the upper Mississippi river with a view to securing a channel depth of 9 feet at low water, accompanied by a report from the Board of Engineers for Rivers and Harbors stating that from information presented it is unable to determine upon a satisfactory plan either for betterment of the existing 6-foot project or for the provision of a 9-foot depth. The board recommends that final action on the case be deferred until the survey has been completed.

"Preliminary examinations and surveys" with a view to obtaining a 9-foot channel between the mouth of the Missouri river and Minneapolis and St. Paul was authorized by Congress in the river and harbor act of January 27, 1927, and a report was submitted early in 1929 by Major C. L. Hall, district engineer at Rock Island, Ill., stating that "the improvement is not worthy of undertaking to the extent of authorizing a survey". An appeal was then taken by advocates of the improvement to the board of engineers and on recommendation of the board and the chief of engineers the War Department later ordered a survey which was assigned to a special board. The special board has now submitted an interim report in advance of the completion of the survey, which has been referred to the Board of Engineers for Rivers and Harbors, and the latter board in turn submitted its report to the chief of engineers for consideration.

General Brown, in his report to Congress goes a little further than the board. He says that the improvement of the main stem of the Mississippi as far north as the Twin Cities goes logically hand in hand with the recently completed 9-foot project on the Ohio to Pittsburgh and the ultimate opening of the Missouri to the greatest feasible depth and is an essential part of the Mississippi Valley system and a part of the route from that system to the Great Lakes.

Reliable and economical navigation is not practicable on a depth of less than 6 feet, he says, but would be assured by a depth of 9 feet. He recommends that all permanent structures on the upper Mississippi river to be built under the existing 6-foot project between the mouth of the Missouri and Minneapolis-St. Paul be executed with a view to being adopted without reconstruction or relocation to plans for an ultimate 9-foot depth, and that after completion of the survey now in progress complete and detailed plans for a 9-foot project from the mouth of the Missouri to the Twin Cities be prepared and submitted to Congress.

The special board stated that the establishment of an attractive service, preferably operated by the private interests immediately concerned, might result in a movement of 4,500,000 tons of grain, with a possible saving of $4,000,000 in transportation costs; 4,000,000 tons of coal, with possible savings of 50 cents to $1 a ton; 500,000 tons of iron ore, and considerable quantities of gasoline and other commodities.

In recommending the survey last May the board of engineers stated that it believed that a reliable estimate of the cost of the proposed improvement was necessary in order to determine whether the savings that will accrue to the general public are sufficiently in excess of those that result from the present 6-foot channel to warrant the extra cost of a 5-foot channel.

Report of Special Board

Based on a general examination the special board submitted a plan for river improvement adaptable to an ultimate depth of 9 feet. It proposed immediate authorization of an expenditure of $50,332,000 for work to better conditions under the present 6-foot project. Also a second plan was submitted covering additional work said to be necessary to complete the comprehensive 9-foot channel between Minneapolis and the mouth of the Illinois river at Grafton. This second step provides for the construction of 11 dams at an estimated cost of $48,091,000. This would make the total cost of canalization for 9 feet above Quincy and regulation below that point $98,423,000. The report states that the estimates had been prepared without detailed survey and are general in character and that the lock and dam locations are tentative and none of the proposed dams should be regarded as definitely fixed as to final location.

The Board of Engineers for Rivers and Harbors said the existing project has not yet been completed and that commerce undoubtedly is handicapped at the present time but that work in progress may be expected to improve existing conditions to some extent. It expressed the belief that greater immediate benefits to navigation will result from utilizing this season in pushing the work now authorized under the 6-foot project and reported that "it is unwise to base a recommendation on the information now available" but that action should be deferred until the survey has been completed. It is expected that the final survey report will be submitted by the special board not later than December, 1930.

Members of the Minnesota delegation in Congress were quoted in the press as saying that they considered the report of the chief of engineers as definitely committing the War Department to the project and that they would appear before the rivers and harbors committee of the House to urge the adoption of that part of the report of the special board relating to an authorization of $50,000,000 for the first step toward a 9-foot channel; also that the rivers and harbors bill contain a provision definitely committing Congress to the 9-foot project.

I.C.C. Appropriation is Passed by House

WASHINGTON, D. C.

THE House on February 15 passed the independent offices appropriation bill, carrying a total of $8,322,650 for the work of the Interstate Commerce Commission for the fiscal year 1931. This was $1,007,313 less than had been recommended by the Budget bureau because the appropriations committee in reporting the bill had reduced the amount proposed for valuation work by that amount and it is now understood that an effort will be made to have the item restored by the Senate. Incidentally some of the mystery as to why the committee cut this out of the bill was cleared up in the debate, but the commission has not yet made public the change in its plans given as the reason.

A statement by Commissioner Lewis that the plans of the commission for a vigorous campaign of recapture of excess earnings had been materially changed after they had been discussed with the Bureau of the Budget in connection with the estimates for the appropriation for the fiscal year 1931, was read in the House by Representative Woodrum, a member of the appropriations committee, in answer to an inquiry regarding the action of the committee in disallowing an increase in the appropriation for valuation from $2,540,000 to $3,547,313. Representative Stafford had raised the question as to why the increase was not allowed, saying that there was evidence throughout the hearings on the bill to show that the commission needs much more money than the amount allowed but that he found nothing in the report of the hearings to support the committee "in making this radical cut."

Mr. Woodrum said that at the time of his appearance before the committee Commissioner Lewis had started to read a typewritten statement regarding the valuation work which did not appear in the record because it had been suggested that he go back to the director of the Budget and resubmit the commission's plans and then come back to the committee with a supplemental estimate.

He quoted from Commissioner Lewis' statement as follows: "I must be frank in saying to you that I represented to him that we would engage in a vigorous campaign of recapture of excess earnings of carriers. The commission proposes to do that, but I must state to you and to him that the plans have been materially changed, by a decision of the majority of the commissioners to whom this matter is assigned. Those changes have occurred since I appeared before the director of the Budget."

"When Commissioner Lewis had gotten that far in his statement," Representative Woodrum said, "his attention was called to the fact that if it were true, as he was stating in his prepared statement, that subsequent to his appearance before the Bureau of the Budget, in which he outlined the program of recapture that would necessitate the employment of 327 additional men and an appropriation of $1,113,000, he had concluded not to pursue that course, then, of course, the commission was not entitled to this appropriation unless they went back to the Budget again and came back to us with a supplemental or a substitute estimate. . . He went back to the director of the Budget, but did not bring back to the committee a substitute or supplemental statement from the Budget, so that when the committee came to mark up the bill it was placed in a position where we had no alternative but to leave the matter out. That matter was explained to the Interstate Commerce Commission, and I understand informally that they expect to present their claims to the Budget and then go to the committee in the Senate and ask that it be incorporated there. . . We understand informally that he has been to the director of the Budget and that the director of the Budget approves the expenditure; but we have no communication on which we could base official action. . . More money unquestionably is needed, but we do not know what they expect to do or what they will need."

Mr. Woodrum said there was no disposition on the part of the appropriations committee "to hamper this very important function of the Interstate Commerce Commission," but that the action of the committee was taken because it was convinced that the estimate had not had proper Budget consideration.

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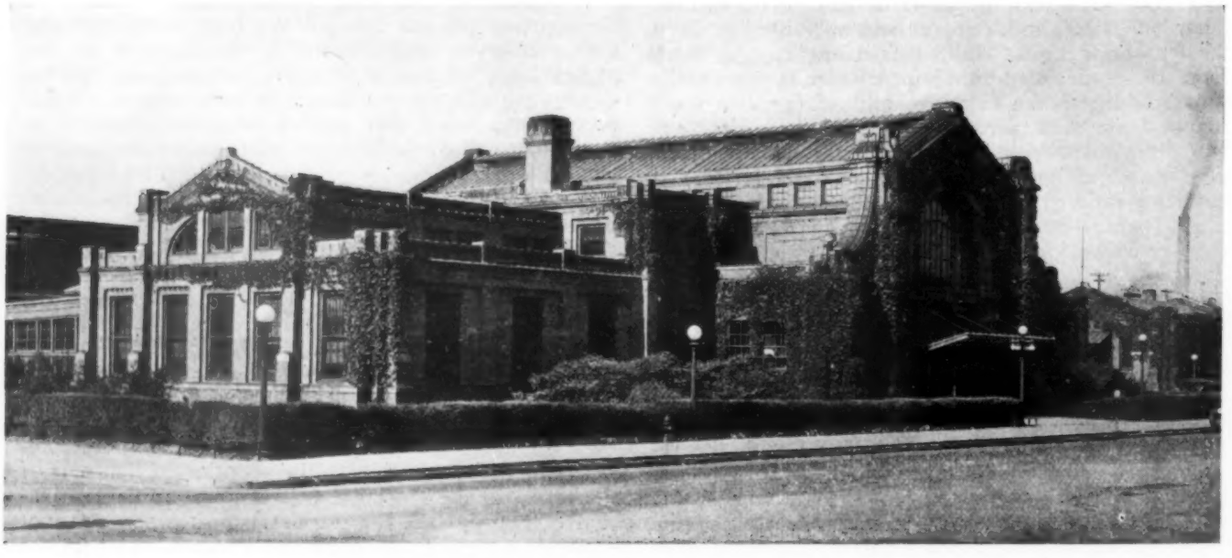


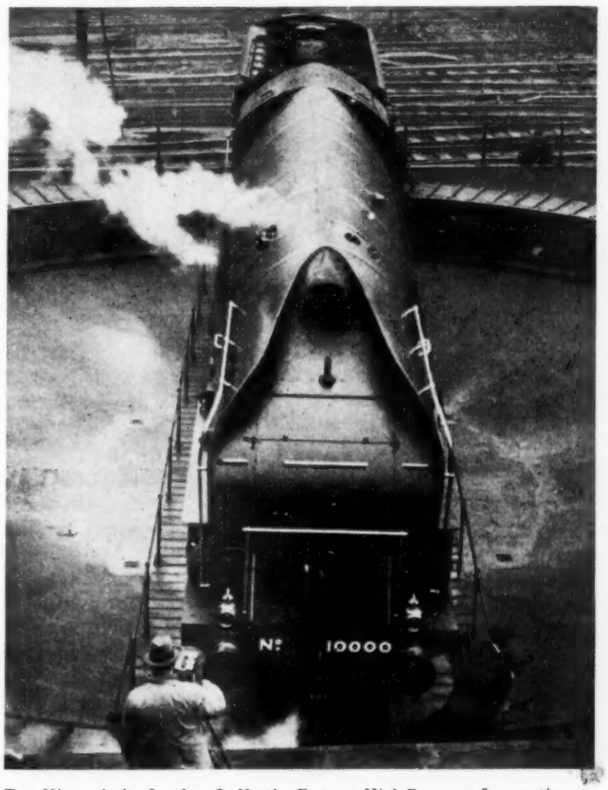
Passenger Station of the Pennsylvania at Fort Wayne, Indiana

British Build 4-6-4 Type Locomotive of Novel Design

London & North Eastern constructs four-cylinder compound for experimental through-passenger service

THE London & North Eastern recently placed in through passenger service on its "East Coast Route," a 4-6-4 type locomotive, the design of which includes many novel innovations. It was built by the railroad at its Darlington, England, shops from designs of H. N. Gresley, chief mechanical engineer. The boiler was built by Messrs. Yarrow & Company, Ltd., Glasgow, Scotland, which firm collaborated with Mr. Gresley in the design of the locomotive. Special features of this locomotive are protected by patents.

It is of four-cylinder compound design, the two high-pressure cylinders being located inside the frames and the two low-pressure, outside. The two high-pressure cylinders are of cast steel, and are 12 in. in diameter by 26-in. stroke. These cylinders are connected to a cranked axle on the front drivers. The two low-pressure cylinders are connected to the main or second pair of drivers in the usual manner by outside connecting rods. They have a diameter of 20 in. and a stroke of 26 in. The driving wheels are 80 in. in diameter. The boiler generates steam for the high-pressure cylinders at 450 lb., and it is exhausted to the low-pressure cylinders at about 200 lb. The tractive force of this locomotive, estimated at 85 per cent, is 40,040 lb. Other dimensions and weights are shown in the table.

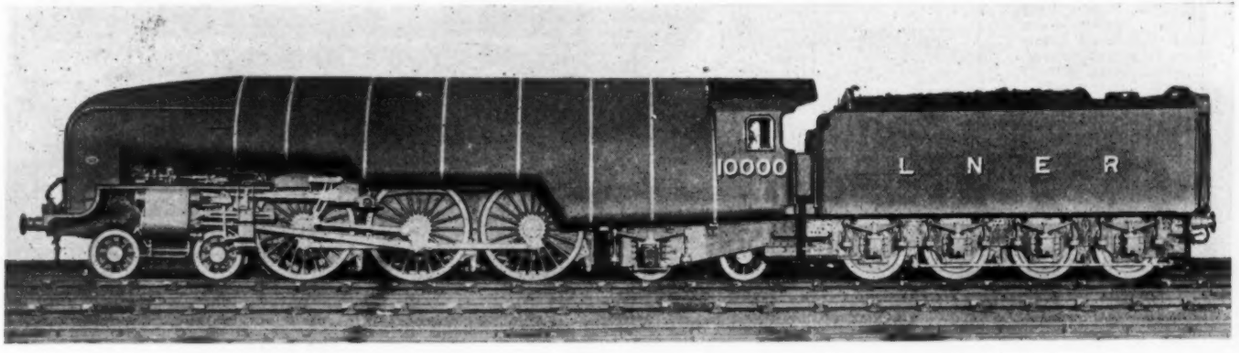


Top View of the London & North Eastern High-Pressure Locomotive

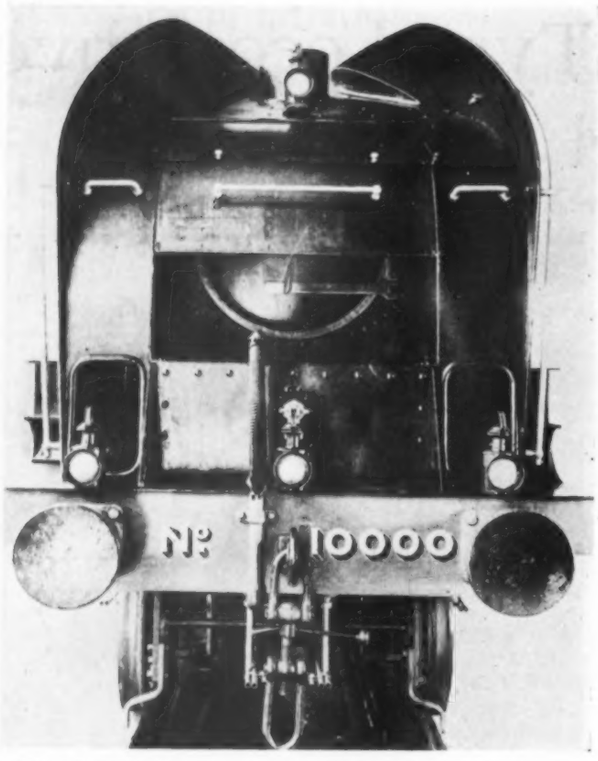
Exterior Design and Boiler Construction of the L. & N. E. 4-6-4 Type Locomotive

The exterior design, especially the design of the front portion of the locomotive, is the result of experiments conducted with a wooden model in a wind tunnel at the City and Guilds Technical College, South Kensington, England. These experiments were conducted with wind velocities equivalent to a locomotive speed of 50 m.p.h. The front of the smoke box is tapered and side screens, brought in to surround the stack, cause the rush of air to lift the steam and smoke well clear of the cab and train. This eliminates any possibility of the engineman's vision being obstructed, and also prevents dirt and cinders from annoying the passengers.

The boiler was designed to take full advantage of the available clearances, which is one of the reasons for the novel appearance of the locomotive. It consists essentially of one steam drum, 36 in. in diameter and 27 ft. 11⅝ in. long, and four water drums. The latter are in two pairs, one pair being located on either side of the grate, and the other pair located side by side at a slightly higher level between the frames. The drums in the



Four-Cylinder 4-6-4 Type Locomotive Designed to Diminish Wind Resistance



The Front End—The Air Intake Openings Are Shown

firebox are 18 in. in diameter and 11 ft. 5⅛ in. long. The two drums located in the barrel of the boiler, forward of the firebox, are 19 in. in diameter and 13 ft. 5¾ in. long. A total of 756 vertical water tubes connect the four water drums to the steam drum. These tubes are arranged as follows: 444 2-in. and 74 2½-in. tubes connect the barrel drums to the steam drum, and 238 2½-in. tubes connect the firebox drums to the steam drum. A back screen of 12 tubes 2½ in. in diameter connects headers to the steam drums. The drums are of forged steel, machined all over.

Principal Dimensions and Weights of the London & North Eastern 4-6-4 Type Four-Cylinder Compound Locomotive

Railroad	London & North Eastern
Builders	London & North Eastern, and Messrs. Yarrow & Co., Ltd.
Service	Passenger
Rated maximum tractive force	40,040 lb.
Cylinders, diameter and stroke	H.p., 12 in. by 26 in. L.p., 20 in. by 26 in.
Valve gear, type	Walschaert
Weights in working order:	
On drivers	140,000 lb.
On front truck	31,400 lb.
On trailing wheels	52,600 lb.
Total engine	224,000 lb.
Total tender	139,800 lb.
Total engine and tender	363,800 lb.
Wheel bases:	
Driving	14 ft. 6 in.
Total engine	40 ft.
Total engine and tender	64 ft. 3⅛ in.
Boiler:	
Type	Yarrow water tube
Steam pressure	450 lb.
Diameter, firebox drums	2—18 in.
Diameter, steam drum	36 in.
Diameter, barrel drums	2—19 in.
Length, firebox drums	11 ft. 5⅛ in.
Length, steam drum	27 ft. 11⅝ in.
Length, barrel drums	13 ft. 5¾ in.
Grate area	40 sq. ft.
Tender:	
Type	Corridor
Water capacity	6,000 gal.
Fuel capacity	10 tons

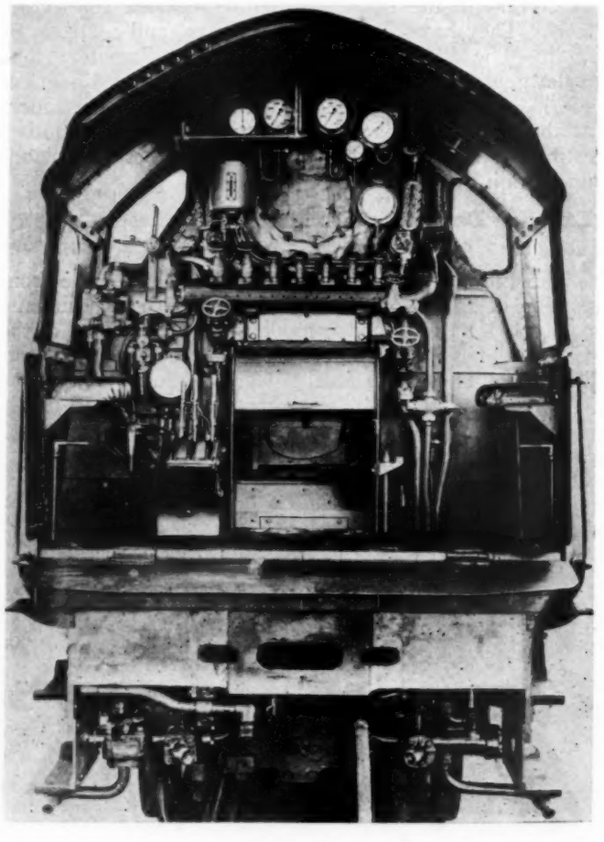
The firebox is fitted with an arch, over which the combustion gases pass before flowing forward through the central space among the front sets of tubes. From this section of the boiler, the gases flow outward and forward to the stack through two flues. An air space is arranged between these flues and the outer casing. In this space air is heated as it passes to the ashpan. Air is taken in at the front of the smokebox through three rectangular openings. The actual supply to the ashpan is controlled by a damper. A superheater is located in the main flue, between the front sets of tubes, the elements from the two headers passing back toward the firebox.

The feedwater is delivered into a forward part of the steam drum which is separated from the remainder of the drum by a weir. The water passes over this weir to the evaporative surface and water drums, and it is anticipated that it will reach a temperature of 400 deg. F. during this process. Scale-forming material is precipitated in this part of the drum, from which it may be removed by blowing off.

Under a four-hour test at 450 lb. pressure the boiler showed an evaporation of 20,000 lb. per hour.

Boiler Auxiliaries

The boiler is fed by a high-pressure Gresham & Craven injector and a Davies & Metcalfe low-pressure injector. The latter is supplied with steam from a low-pressure manifold on the boiler wall, above the fire door. This manifold is supplied from the boiler through a reducing valve which maintains a pressure of 200 lb. for the supply of the vacuum-brake ejector, steam sanders, whistle and heater, in addition to the injector. The main throttle is located between the cylinders and the superheater and supplies steam to the high-pressure



The Cab

steam chests. An auxiliary throttle supplies steam directly to the low-pressure cylinders for use in starting. This valve is closed when the locomotive is running. The low-pressure cylinders are provided with relief valves set at 200 lb. pressure.

The Running Gear

The high-pressure cylinders are spaced 14¼ in. center to center, and are located about 18 in. ahead of the outside cylinders. Placing the high-pressure cylinders close together and designing the crank with a single web, permitted the use of large journal bearings. The cylinders, steam chests, and receiver are a single steel casting, the cylinders being fitted with cast-iron liners.

A Walschaert valve gear drives the valves for the outside cylinders and the inside valves are operated off this by means of rocking shafts which extend over the low-pressure steam chests. The inner arm of each rocking shaft is provided with a slot. A sliding block, to which the valve rod is attached moves in this slot. Changing the position of the block in the slot permits the cut-off of the high-pressure cylinders to be varied independently of the low. Two sets of steam reversing gears are provided one for the Walschaert gear and the other to control the high-pressure cylinder cut-off. These gears are operated by telemotors designed by Messrs. McTaggart & Scott, Edinburgh, Scotland.

The piston valves for the high-pressure cylinders are 6 in. in diameter and those for the low-pressure cylinders are 8 in. in diameter, the maximum travel being 6 13/16 and 6 11/16 in., respectively. The steam lap is 1⅜ in. for the high-pressure valves and 1⅝ in. for the low-pressure, the exhaust lap being line-and-line. The cut-off in full gear is 80 per cent for the high-pressure cylinders and 75 per cent for the low-pressure cylinders.

There are two trailing axles. The front axle has outside journal boxes which are mounted in pedestals in the locomotive frame. The rear axle is mounted in a Bissel truck, the center of which is located immediately behind the firebox.

The Tender

The tender is of the corridor type similar in design to those used on the "Flying Scotsman" and "Royal Lancer" trains of the London & North Eastern. A description of these tenders appeared in the September 8, 1928, issue of the *Railway Age*, page 447. They have a water capacity of 6,000 gal. and a fuel capacity of 10 tons.

* * *

Gas-Electric Cars on the Minneapolis & St. Louis

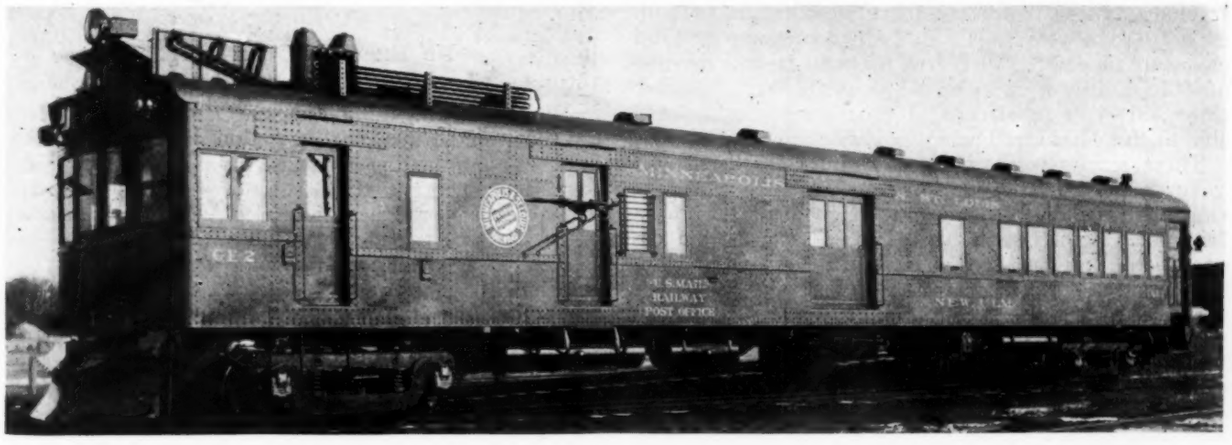
ON January 1, the Minneapolis and St. Louis replaced with three gas-electric cars, the following steam passenger trains: Nos. 28 and 29, between Winthrop, S. D., and Storm Lake, Ia.; Nos. 9 and 10 between Mason City, Ia., and Oskaloosa, Ia.; and Nos. 19 and 20 between Oskaloosa and Peoria, Ill. These three cars, built by the St. Louis Car Company and equipped with Electro-Motive 300-h.p. power plants, have given efficient service since installation and have experienced no serious difficulty in making passenger train schedules, in spite of some cases of bad weather and heavy snow.

The cars have the following general dimensions: Length outside over body, 75 ft.; engine compartment, 13 ft. 4½ in.; mail compartment standard, 15 ft.; baggage compartment, 22 ft. 1 in.; passenger compartment, 20 ft. 6 in., seating 32; weight, approximately 110,000 lb. They are designed to pass over a 20-deg. curve and develop a speed of 65 miles an hour when operating single, or 50 miles an hour when operating with a trailer.

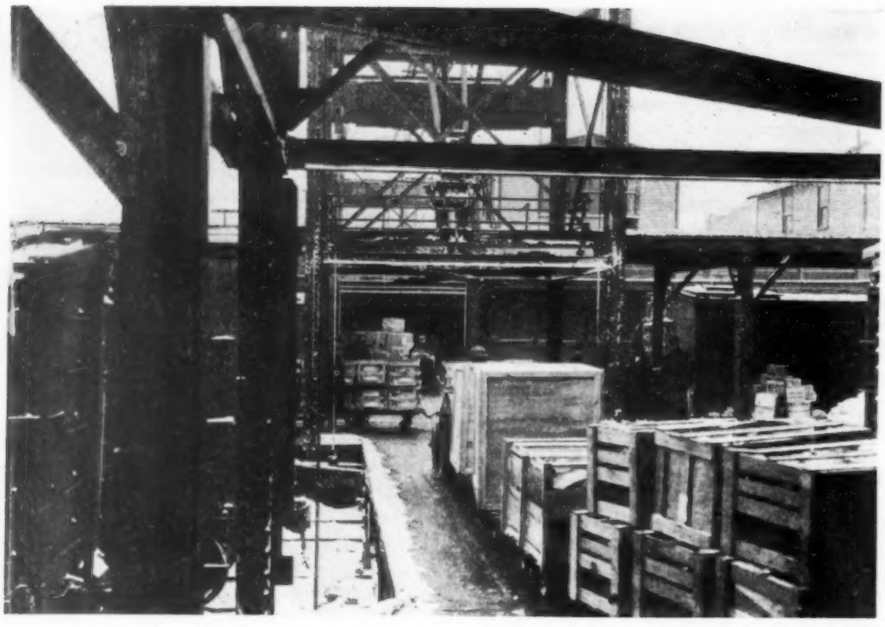
The cars are of all-steel construction, thoroughly insulated with ¾-in. Balsam wool and provided with Commonwealth cast steel trucks, having 5½-in. by 10-in. journals on the front and 5-in. by 9-in. journals on the rear truck. Standard A.R.A. bearings are used throughout.

The cars are equipped with an electric lighting system employing indirect fixtures in the passenger compartment. The proper temperature is maintained by a Vapor hot-water heating system with thermostatic control. The interior finish in the passenger compartment is mahogany. The exterior is finished in lacquer with the company's monogram stenciled on either side. The cars, numbered GE-1, GE-2, and GE-3, are called Peoria, New Ulm and Oskaloosa, respectively, these names also appearing on the car sides.

The power plant, furnished by the Electro-Motive Company, Cleveland, Ohio, develops 300 h.p. and is provided with carburetors designed for burning either gasoline or distillate. A feature of the power-plant arrangement in the car is the location of the radiator and engine water-cooling equipment on the forward roof, thus permitting an unobstructed view forward from any point in the front of the cab.



Electro-Motive Gas-Electric Car Built for the Minneapolis & St. Louis by the St. Louis Car Company



On the Freight Platform of the Kansas City, Mo., Station of the Missouri Pacific

Campaigns Reduce Claims

Missouri Pacific also finds close supervision a valuable aid

By T. F. Scruby

Superintendent Stations and Claim Prevention,
Missouri Pacific

IN 1928, the Missouri Pacific paid out $1,049,235 in loss and damage claims; in the same year its total freight revenues aggregated $109,663,557, giving a ratio of 96 cents paid in claims per $100 of freight revenue. In 1929, the showing was even better, the estimated ratio being 93 cents for each $100 of freight revenue. These figures compare most favorably with those of some years ago. In 1921, for example, claim payments totaled $2,071,107 with a total freight revenue of $81,660,401, a ratio of $2.54 per $100. In other words, $1.61 more of each $100 of revenue was available to the Missouri Pacific in 1929 than in 1921.

These results were obtained by intensive campaigns to further claim prevention, and to decrease exceptions and rough handling. These three campaigns have been carried on jointly, with the idea of securing the cooperation of all employees. In the furtherance of education of employees along these lines, the campaigns have been carried on continuously, both by personal contact and by the distribution of literature. The latter activity includes the dissemination of statistics showing the progress made, both locally and from a system standpoint, keeping before the men the dollars and cents value of claim prevention. In addition, bulletins are mailed for posting in prominent places. These bulletins are attractively devised and serve the purpose of "reminder copy." That is to say, their object is to aid in keeping claim prevention, no exceptions, and the elimination of rough handling in the minds of the men. Some sample bulletins are reproduced herewith.

"No Exception" Campaigns

While every day is a claim prevention day on the M. P., the months of March and October of each year are set aside as the "No Exception" months, and during these months, the most intensive campaign possible is carried on to stimulate the interest of all employees in the various branches of service. During these campaigns a trip is made over the entire system by the assistant to the vice-president and general manager, accompanied by the superintendent of stations and claim prevention, the freight claim agent and the supervisory officers of the various divisions. "No Exception" meetings are held at the various terminals and larger stations with all classes of employees, at which time it is explained how loss and damage to freight affect the road's relations with the public. The economies to be

enjoyed by claim prevention are explained by translating the money paid for loss and damage into terms of betterments, illustrating how far such expenditures would go in the production of more and better facilities, more power, new equipment, cars, rails, automatic signals, etc., as well as the benefits to be derived by additional business secured by rendering better service to the public. It is the endeavor to impress upon all employees the viewpoint that when a shipper or consignee sells his merchandise to the carrier on account of loss or damage, he sells it at a loss to himself; that our patrons do not want claims, that the consignee loses the profit which would have accrued if he had sold the merchandise over his counters, while the time and expense of filing and following up the claim is lost; that the time taken up by business managers, superintendents, district and executive offices or their employees could be applied in a more profitable manner than in the handling of claims, which might have been prevented if the employees had given the matter the thought and attention it deserves. By releasing either the consignee or the shipper from the burden of filing and handling the claims, and by having the merchandise arrive at destination in salable condition and sold at a profit, not only the shippers, but the consignees and carriers as well, are more satisfied.

The effect of the campaigns is indicated in the over, short and damage reports. Prior to their inauguration, such reports averaged more than 1,200 daily, whereas, for 1928 and the first ten months of 1929, these reports averaged about 370 per day. In other words, exceptions of all sorts were reduced by over 800 daily, or 4,800 weekly.

The October Campaign

The activities during the latest "no exception" month, October, 1929, will serve to illustrate the specific application of these principles. The territory is divided into three districts, the Eastern, Western and Southern, with headquarters at St. Louis, Mo., Kansas City, Mo., and Little Rock, Ark. Meetings were held by the general superintendents of these districts in the latter part of September, attended by the superintendents under their jurisdiction, also by representatives of the "no exception" campaign committees on each division, consisting of the assistant superintendent or trainmaster, the train dispatcher, the road foreman, a roadmaster, a yardmaster, a local freight conductor, a through freight brakeman, a through freight engineer, a switch fireman, a yard foreman in charge of industrial switching, a train yard switchman, a local agent, a warehouse foreman, a telegrapher, a section foreman, a bridge foreman, a signal maintainer, and agents at all the principal stations on his territory. More than 1,000 employees attended the initial campaign meetings held by the general superintendents.

Bulletins Play an Important Part in the Missouri Pacific's Claim Prevention Activities

On their return to their respective divisions, each of the 17 superintendents held a similar meeting with his local "no exception" campaign committee, with all others concerned in attendance, and, in turn, each agent at the principal stations held a meeting with his office and warehouse forces. During this campaign 340 meetings were held, with 11,910 in attendance.

Every effort is made to solicit the co-operation of shippers and receivers of freight, and we have yet to find a shipper who has declined to lend every assistance possible in the adoption of loading methods, to correct any discrepancy on his part, or to aid in effecting delivery at destination in the best possible condition.

Some 40,000 posters were distributed during the October campaign, and posted in every conspicuous place on the railway. The committees on each division, appointed by the superintendent to function during the October campaign, will remain active until the next campaign, which will be in March, 1930. These committees are requested to report to the superintendent any practices or conditions that would cause an exception, which they have noted and corrected; any practices or conditions that caused exceptions, which they noted and on which they took action to prevent a recurrence; or any practices or conditions that would cause exceptions, which they noted and could not correct personally.

Correcting Rough Handling

During October, one air brake instruction car had an attendance of 1,161 employees in one terminal.

The superintendent of stations and claim prevention has a staff of ten inspectors situated at various division points, who co-operate with the local operating officers in eliminating rough handling. They handle the distribution of 55 impact recorders. In order that all employees might understand how these machines function, the inspectors have explained at various meetings, held in terminals and yards in the last three years, just how these machines work and made actual tests to show what the movement of cars in excess of a speed of five miles per hour at the time of impact means to the car itself as well as the contents. It has been our experience that the men as a general rule, welcome information as to rough handling, and use every effort to avoid it, when the matter is properly brought to their attention.

The mechanical department co-operates closely. Instructions are issued by the chief mechanical officer to master mechanics and shop superintendents. Car inspectors are instructed to specialize in the proper inspection, classification and carding of equipment. Agents at stations where there are no car inspectors are required to inspect each car placed personally to see that it is fit for the lading intended.

A carload exception report is issued each month, covering the exceptions noted to carload freight loaded at stations on the line. Matters developed by these reports are handled with shippers by members of the superintendent's staff in person and not by letter; that is, each exception appearing on the report is handled personally with the one at fault, whether it be the shipper or a railway employee. This personal contact with shippers tends to bring about better relations, and affords an opportunity to enlist the co-operation of the shippers in preventing conditions that result in loss and damage to freight. Special handling is given the carload exception report during the "no exception" campaign months and superintendents and trainmasters keep a copy of this report in their possession at all times.

Another feature that has been found to be of great value in the prevention of claims is the practice of having a claim prevention inspector go to each freight train derailment. On such occasions, the inspector is in full charge of the picking up of the freight, the relief crew acting under his instructions in this regard. Of course, the prime importance of clearing the line is not overlooked, but every effort is made by careful handling to keep the damage to freight to the minimum. It has been found that the reduction in damage to lading caused by derailments has more than justified the relatively small expense of having an inspector on the ground to see that the cars are handled properly.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 8 amounted to 886,581 cars, a decrease of 69,400 cars as compared with the corresponding week of last year and of 19,896 cars as compared with 1928. It was also a reduction of over 12,000 cars as compared with the preceding week. All classes of commodities showed reductions as compared with last year and all except coal a decrease as compared with 1928. All districts also showed reductions as compared with last year, while the Allegheny and Central Western were the only ones to show an increase over the loading of 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 8, 1930

Districts	1930	1929	1928
Eastern	205,573	228,893	207,214
Allegheny	180,700	194,330	181,344
Pocahontas	56,984	61,271	51,480
Southern	134,809	147,893	144,370
Northwestern	108,037	112,392	117,905
Central Western	131,491	135,900	130,797
Southwestern	68,987	75,302	73,367
Total Western Districts	308,515	323,594	322,069
Total All Roads	886,581	955,981	906,477
Commodities			
Grain and Grain Products	43,739	47,837	46,190
Live Stock	25,779	27,521	32,844
Coal	193,755	219,999	168,946
Coke	11,713	13,631	12,736
Forest Products	53,524	59,779	68,315
Ore	7,976	9,337	8,512
Merchandise L.C.L.	241,426	248,825	250,336
Miscellaneous	308,669	329,052	318,598
February 8	886,581	955,981	906,477
February 1	898,894	947,154	926,262
January 25	862,621	926,474	902,664
January 18	847,353	931,861	884,683
January 11	863,191	914,438	907,301
Cumulative total, 6 weeks	5,134,899	5,474,590	5,281,634

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 8 totaled 57,250 cars, a decrease from the previous week of 1,715 cars and a decrease of 6,814 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 8, 1930	57,250	38,932
February 1, 1930	58,965	38,970
January 25, 1930	58,312	36,615
February 9, 1929	64,064	46,257
Cumulative Totals for Canada		
February 8, 1930	326,405	213,819
February 9, 1929	345,773	234,481
February 11, 1928	374,093	221,513

Federal Trade Commission Opens "Reciprocal Buying" Case

Hearings at Chicago show use made of Swift & Company's traffic to sell supplies to railroads

THE Federal Trade Commission opened hearings at Chicago on Monday, February 17, on a formal complaint of the Commission charging the Mechanical Manufacturing Company and officers of Swift & Company, the packers, with using unfair methods of selling and promoting the sale of supplies to the railroads. As reported in *Railway Age* of December 28, 1929, the complaint charges violation of Section 5 of the Federal Trade Commission Act, it being alleged that railway companies were "induced and compelled" to purchase draft gears, bumping posts and other equipment manufactured or sold by the Mechanical Manufacturing Company by promises of freight to be shipped by Swift & Company, or by threats of its withdrawal.

The hearing was held before Examiner John W. Addison of the Federal Trade Commission, with E. F. Haycraft and James A. Horton representing the Commission, and Fred Horton representing the Mechanical Manufacturing Company. After a technical defense had been entered by the attorney for the respondent in the form of a motion to dismiss the complaint principally on the grounds that the law had not been violated, and that the Mechanical Manufacturing Company had discontinued the draft gear business and the manufacture of all other railway supplies except bumping posts before the complaint had been filed, the representatives of the commission established the financial interest of officers of Swift & Company in the Mechanical Manufacturing Company by the testimony of George A. Hood, secretary of the Mechanical Manufacturing Company and manager of the bureau looking after the affairs of the Swift family. Mr. Hood produced the books of the Mechanical Manufacturing Company and showed that approximately 52,000 out of 75,000 shares of common stock were held by officers of Swift & Company or members of the Swift family, and that approximately 4,300 out of 5,000 shares of preferred stock were also so held. The witness also brought out that the directors of the Mechanical Manufacturing Company were all officers of Swift & Company or members of the Swift family.

F. N. Beeson, president and general manager of the Mechanical Manufacturing Company, was the next witness. It developed from his testimony that the Mechanical Manufacturing Company undertook the production and sale of draft gears and car-centering devices at the beginning of 1929. The witness testified that an attempt had been made to sell its devices to all railroads, and estimated that about 10,000 gears had been sold to railroads which he agreed to name.

Railway Officers Testify

After Messrs. Hood and Beeson had testified, the commission began taking the testimony of railway officers who had been subpoenaed to appear, beginning with F. B. Houghton, vice-president in charge of traffic of the Santa Fe, and following with J. T. McCabe, assistant traffic manager of the same road.

Mr. McCabe produced considerable correspondence relating to the purchase of draft gears and bumping posts and other equipment, which was admitted only over the vigorous protest of the respondent. He testified that his negotiations relative to bumping posts manufactured by the Mechanical Manufacturing Company started with a conversation with R. O'Hara, traffic manager of Swift & Company, in which the interest of officers of Swift & Company in the Mechanical Manufacturing Company was disclosed and it was indicated that if the Santa Fe could consistently buy bumping posts from it an increase in traffic from Swift & Company could be arranged. As disclosed by the correspondence, the matter was referred to the railway's engineering department for investigation which subsequently made a report favorable to the device. Mr. McCabe testified that the Santa Fe received "a little more traffic, but not much," and surrendered correspondence which showed the attitude of officers of Swift & Company in the negotiations.

In a letter written on March 17, 1928, Mr. O'Hara said:

"I thought when we worked out some bumping post business for the Mechanical, it was going to amount to something; but I am sorry to advise you that for the past six months the Mechanical has sold you only five posts. This hardly justifies the action we took with reference to the movement out of Kansas City. Please let me know what you have to say about it."

In another letter, written on June 23, 1928, Mr. O'Hara said:

"In the early part of May I talked with you about the bumping post business for the Mechanical Manufacturing Company in which the Swift family, and the writer, are interested. At that time you agreed to take the matter up with the operating department and post us.

"I enclose a catalog showing these bumping posts, which most of the principal railroads of the country are using as their standard, and I should like very much to have you, in view of the large volume of competitive traffic that we are favoring you with, take whatever action is necessary to see that we secure your bumping post business in the future. Please reply."

The witness admitted having referred the subject of this letter to the proper department for further consideration, but testified to having explained that the Santa Fe would purchase only half of its requirements from the Mechanical Manufacturing Company, and not its entire requirements, as expected by O'Hara.

Draft Gear Negotiations

The witness further testified that the draft gear negotiations with O'Hara were begun by correspondence,

and he surrendered a letter from O'Hara to the Santa Fe which, like the previous letters, was admitted over the strenuous objection of the respondent. In this letter, which was dated December 4, 1928, and written on Swift & Company stationery, Mr. R. O'Hara said:

"We should like very much to have you put us in contact with the proper people in your organization, so that we may arrange to have them use these draft gears on at least 25 per cent of your new equipment. I notice from this morning's Journal of Commerce that you contemplate buying $10,000,000 worth. These draft gears are being used on the Swift equipment, and price and quality are behind the goods."

Several other letters comprising the correspondence with O'Hara and Mayfield, also a traffic officer of Swift & Company, were then surrendered regarding heating units which they tried to have the railroad purchase. Mr. McCabe did not know whether any purchases had been made or not, explaining that his work was only in the traffic department. Upon questioning, he explained that for the last five or six years the pressure of shippers in regard to reciprocity buying had become so severe that it was decided to concentrate the work of handling it in him to avoid confusion.

J. R. Haynes, purchasing agent of the Burlington, testified to having bought draft gears from the Mechanical Manufacturing Company in 1929 for the first time, there being two orders for 100 and 150 sets, respectively. These draft gears, he explained, were bought for rebuilt cars, and no test preceded their application.

The negotiations for the draft gear were begun in his office between a salesman of the Mechanical Company and himself, but prior to buying the gears he met O'Hara in the office of the executive vice-president. At the time of the negotiations he explained that other draft gears were in use. He stated that the "Durable" gear of the Mechanical Manufacturing Company was not a well-known one, but that the company had been known to him personally for over 30 years, and he further explained that while no test was made of the Durable before installation, this was not unusual, as the first gears applied were service test lots. When asked if it was customary for the Burlington to put as many as 250 gears in service without any test, he stated that 1,000 gears of another make had been so applied in 1920.

Draft Gear Prices

Mr. Haynes expressed the opinion that the Durable gear, costing $65 per set, was a high priced gear. The attorney for the respondent endeavored to draw from the witness that the competition of the Mechanical Manufacturing Company tended to lower draft gear prices. The witness stated that the prices of draft gears had decreased since the Durable entered the market, but explained that the trend of all commodity prices has been down.

The next witness was F. D. Reed, vice-president in charge of purchases and stores of the Rock Island, who produced correspondence much of which was placed in the record over the objection of the counsel for the respondents. He testified that negotiations with reference to the purchase of draft gears of the Mechanical Manufacturing Company were begun in December, 1928, pursuant to a letter sent by Swift & Company and a request by the traffic department of the Rock Island that the purchasing department see if some of the draft gears of the Mechanical Manufacturing Company could be used. After prices and other information had been obtained from the Mechanical Manufacturing Company, the subject was referred to the Rock Island's mechanical department, which agreed to try the gears out on repaired cars. The witness testified that after having secured a guarantee on the draft gear, the road purchased 75 sets for repaired cars on March 23, 1929, and thereafter placed additional orders which brought the total number purchased in 1929 up to 525 sets, which cost $65 a set. He testified that over 7,000 draft gears of other kinds were purchased during the same year, and that the prices of these gears ranged from $55 to $94 per set. In response to questioning, Mr. Reed testified that draft gears of the Mechanical Manufacturing Company have been in service on the Rock Island since May, 1929, and that he had not heard any complaints about them, but that he would not know of such complaints unless they were brought to his attention by the department using the gears.

In answer to a question whether prices of draft gears had increased or decreased since the gear of the Mechanical Manufacturing Company had been put on the market, Mr. Reed stated that no appreciable change in price had occurred, adding that the prices of materials from which all gears are made have remained quite stable. Upon re-examination by the commission's attorney, he admitted that the traffic department of the Rock Island was anxious to have the road purchase the gears, but testified that that was not an unusual experience, and that traffic departments are urging such considerations on the other departments all the time, and stated it to be the established policy of the Rock Island to favor firms that give the Rock Island traffic.

"Reciprocity" Basis

J. T. Gillick, operating vice-president of the Chicago, Milwaukee, St. Paul & Pacific, admitted receiving a letter from R. O'Hara of Swift & Company, calling attention to the interest of the Swift family in the Mechanical Manufacturing Company, and stating that the Milwaukee was expected to use this company's draft gears and bumping posts on a "reciprocity" basis, which letter and subsequent correspondence were introduced over the objection of respondent. Mr. Gillick said that pursuant to this letter, a couple of sets of the gears were obtained for study. He stated that while a standard gear test was not made, the sample gears were taken apart and inspected, and this lead to a decision to buy 50 sets after the Mechanical Manufacturing Company had agreed to make some changes in the gear. The changes were made and 25 sets were applied to repaired cars.

The witness admitted having discussed the "reciprocity" phrase with Mr. O'Hara, and stated his conception of it to be the favoring of shippers with purchases, providing the quality and price are consistent with those offered by competing firms. He stated that he did not discuss the traffic question with O'Hara in his investigation of the draft gear, but was aware that the freight traffic of Swift & Company over the Milwaukee ranged from 25,000 to 30,000 cars a year.

Others testifying before the Chicago hearing were C. B. Young, consulting mechanical engineer of the Burlington, H. R. Kurrie, president of the Monon, J. F. Marshall, purchasing agent and C. M. House, superintendent of motive power and equipment of the Chicago & Alton, and J. K. Cook, president, Keyoke Railway Equipment Company. Mr. Young said he had studied the Durable gear for the Burlington with unsatisfactory results and could not alter his conclusions merely because no complaints had yet been heard against the gears in use on his road. Mr. Marshall's testimony showed

that correspondence from Swift & Company had resulted in purchases of the Durable gear by the Chicago & Alton. When Mr. House was asked if he had recommended the purchase of these draft gears in 1929 he said no and he testified that he was not yet ready to pass on their serviceability.

Mr. Kurrie states that the Monon had also been solicited by Swift & Company to buy supplies from the Mechanical Manufacturing Company but he did not recollect that any draft gears had been bought. When asked if the purchase of supplies on reciprocity terms with shippers was desirable from a railroad standpoint, he advanced the thought that everybody would rather do business on a quality and price basis, but that reciprocity was too prevalent to ignore. By purchasing on a quality and price basis he said that everybody has an equal chance, whereas the use of freight traffic may improperly influence quality and price.

Mr. Cook testified that the Murray draft gear which his company sold to railroads through negotiations solely with mechanical and purchasing officers suffered from the competition of Swift & Company. He said that until recently this gear was a standard article on the Illinois Central and Pere Marquette. The hearing occupied two days at Chicago and was resumed at St. Louis on Thursday.

Extra Fare Inquiry Begun at Chicago

THE Interstate Commerce Commission opened its inquiry into extra fares on passenger trains, I. C. docket 22735, on February 17, when Examiners Worthington and Boat began a series of hearings in Chicago. The general inquiry also includes I. C. docket 13871, a fourth section application filed by C. A. Fox and C. M. Burt, passenger tariff publishing agents for eastern lines, which application asks for release from the aggregate of intermediate fares provision of the fourth section of the Interstate Commerce Act. The application, as filed by the eastern carriers, asks for authority to maintain extra fares on fast trains operating between points on lines of the companies in the states of New York, New Jersey, Delaware, Pennsylvania, Maryland, Ohio, Michigan, Illinois and Indiana and to St. Louis, Mo., and Windsor, Ont., without observing the aggregate of intermediate provision of the fourth section.

After the Commission announced that a hearing would be held on the fourth section phase of the subject, interested parties raised the question as to whether the extra fares were not being charged without the rendition of any extra services either in speed or luxury. The volume of communications became so large that the Commission decided that the matter was not one of fourth section concern, but was of the broader question—whether the extra fares did not constitute increases in fares for ordinary service without authorization from the Commission.

The railroads have contended that the services rendered are of a character differing from those performed on the ordinary passenger trains. At the Chicago hearing the carriers presented testimony and exhibits outlining the history of extra fare trains and showing the general characteristics of the service and the costs involved in operation. Charles M. Burt, chairman of the passenger department of the Trunk Line Association, reviewed the history of extra fare trains, accounting for their growth by the increasing demand for speed and service in modern business. He said that if the present service were maintained without extra fares, it is obvious that all long distance travel would seek the faster trains, destroying the earnings of the slower trains.

Origination of Extra Fares

The extra fare idea originated about 32 years ago, when trains between New York and Chicago began making the run in less than 28 hours. For each hour or fraction saved, the two stronger lines between those points began charging an extra fare of about $1.20 per hour or fraction saved. For a time the Baltimore & Ohio refused to charge extra fares on its fast trains out of Washington, which action made it impossible for the Pennsylvania to charge an extra fare except from New York. With such an arrangement it was possible for a passenger to purchase two local tickets from New York to Harrisburg or Pittsburgh and then to Chicago, thereby avoiding the extra fare. This, it is charged, constitutes a contravention of the aggregate of intermediates.

The Pennsylvania, through F. W. Conner, passenger traffic manager at Philadelphia, and J. E. Burrell, special agent, introduced exhibits and testimony showing the decline in passenger revenue, the nature of the service rendered and expenses incident thereto. One exhibit showed that the total passenger revenue on this system decreased from $26,297,301 in 1923, to $21,923,983 in 1928. Coincident with this decrease, the extra fare revenue increased from $312,073 in 1923, to $418,627 in 1928, while in 1923, $92,764 was refunded because of lateness of trains and $33,735 because of broken trips. In 1928, $23,998 was refunded because of lateness of trains and $33,479 because of broken trips.

Another exhibit showed the trend of the motor coach business. During the year ending on January 1, 1925, 53,200 motor coaches were operated in the United States and carried 870,000,000 passengers for a gross revenue of $186,000,000, while for the year ending January 1, 1929, the number of vehicles operated totalled 92,400, the passengers carried reached 1,793,000,000 and the gross revenue $366,000,000.

Since a controversy over the extra fares from the east to the west by way of Chicago and by way of St. Louis is involved, Mr. Conner introduced a map of the United States showing the percentage of people traveling to each state by way of each of the two cities named. For example, of the number of people traveling from the east, based on the number of tickets sold by the Pennsylvania at New York, Jersey City and Brooklyn for travel to the state of Washington from July, 1929, to December, 99 per cent went by way of Chicago and one per cent by way of St. Louis, while for Oklahoma points 4.8 per cent went by way of Chicago and 95.2 per cent by way of St. Louis.

At this point C. E. Hochstedler, traffic director of the Chicago Association of Commerce, which body is an intervener, asked for additional figures which would show the proportion of passengers using both gateways over a period of years, contending that since the Association was intervening because the extra fares charged favored travel through St. Louis at the expense of Chicago, the Commission should have a clearer picture of the existing conditions. According to Mr. Hochstedler, a passenger from New York to Chicago pays an extra fare of $9.60, while one from New York

to St. Louis, where the distance is 100 miles greater, pays only $4.80 for the same extra service.

Another exhibit presented by the Pennsylvania was introduced to substantiate the extra fares by showing the improvement in schedules from 1900 to 1930. The time from New York to Chicago in 1900 was 24 hours, while in 1930 it had been reduced to 20 hours. The time from New York to St. Louis was 28 hours and 30 minutes in 1900 and 23 hours and 50 minutes in 1930; from New York to Cleveland 16 hours and 13 minutes in 1900 and 12 hours and 55 minutes in 1930; from New York to Cincinnati 21 hours and 3 minutes in 1900 and 17 hours and 5 minutes in 1930; from New York to Louisville, by way of Cincinnati, from 26 hours and 27 minutes in 1900, to 21 hours and 5 minutes in 1930; from New York to Louisville, by way of Indianapolis, 25 hours and 30 minutes in 1900 to 22 hours and 40 minutes in 1930, and from New York to Washington from 5 hours in 1900 to 4 hours and 25 minutes in 1930.

Faster Trains Preferred

To show that the patrons prefer the faster trains, another exhibit compared the number of trains operated and their speeds. In 1920, this road operated one 20-hour train in each direction between New York and Chicago, while in 1930 the number had increased to three. In 1920, no 21-hour trains were operated, while in 1930, four were operated eastbound and two westbound. In 1920, one 22-hour train was operated in each direction, while none was operated in 1930. The number of 23-hour trains in 1920 and 1930, one in each direction, remained the same. In 1920 one 24-hour train was operated eastbound and none westbound, while in 1930 there were no eastbound but two westbound 24-hour trains. Between New York and St. Louis a similar condition existed. No 24-hour trains were operated in 1920, while in 1930, there were three eastbound and four westbound. In 1920, two 28-hour trains were operated eastbound, while in 1930, there were two eastbound and one westbound.

L. F. Vosburgh, vice-president in charge of passenger traffic of the New York Central, testified that the time saved by the faster trains was an influencing factor in the selection of trains by the public. A statement was introduced to show the extra fares which would result at intermediate points under fourth section principles. On the Wolverine, for example, where the extra fare from New York to Chicago is $9.60, the extra fare under fourth section principles from a point such as Kalamazoo, where there is no present extra fare, would be $1.25. A statement of earnings from extra fares showed gross earnings of $3,903,822, from which were refunded $22,000 because of lateness and $116,379 because of stopovers.

Another exhibit showed that of the eastern carriers on which the extra fare revenue amounted to $6,511,878, the refunds amounted to $206,668 in 1928. The total number of passengers carried in 1928, excluding commutation, was 105,849,944, while the average haul per passenger, excluding commutation was 78.99 miles. He also testified that by dividing the net railway operating income by the property investment, the rate of return amounted to 5.11 per cent for the New England roads; 5.63 per cent for the Central Freight Association roads; 4.26 per cent for the Trunk Line Territory; 4.69 per cent for the roads in the Central Freight Association and Trunk Line Territory; and 7.47 per cent for the Pocahontas roads during 1928, or a total of 5.09 per cent for the eastern districts. Corresponding figures for 1923 were 2.40 per cent for the New England roads; 5.99 per cent for Central Freight Association territory; 4.20 per cent for Trunk Line territory; 4.61 per cent for the roads in the Central Freight Association and Trunk Line territory; and 5.48 per cent for the Pocahontas roads, or a grand total of 4.63 per cent for the eastern district.

Application to Intermediate Points

C. A. Barber, general passenger agent of the Lehigh Valley, said that if extra fares are applied to intermediate points, such application would eliminate local business and would necessitate the addition of extra trains to handle local traffic, thereby duplicating the train service without additional revenue. On a 24-hour 10-minute Chicago train, where there is no extra fare from New York to Buffalo, the extra fare under fourth section principles would amount to $2.10, and from New York to Ithaca $1.35.

E. N. Thorn, assistant general passenger agent of the Baltimore & Ohio, said that the practicability of present extra fares is substantiated by the fact that 70 per cent of the patrons from New York to Chicago ride on extra fare trains. He also said that if an extra fare was applied to trains operating from Washington to Chicago on the basis of 24 hours service from New York, the 18-hour schedule from Washington would necessitate an extra fare of $4.80. In addition, if extra fare trains operated from New York to Chicago by way of Washington, were not permitted to carry passengers from Washington to Chicago, it would be necessary to establish an additional train from Washington, thereby duplicating service.

Third Day's Proceedings

On the third day of the hearing further testimony to support the continuance of extra fares was submitted by C. C. Howard, passenger traffic manager of the Erie, J. A. Swartz of the passenger department of the New York, Chicago & St. Louis, A. B. Chown, general passenger agent of the Grand Trunk, L. G. Reymiller of the statistical bureau of the Western Lines and L. A. Blatterman, general passenger agent of the Wabash. The latter discussed differential fares and showed that when such were eliminated the differential carriers suffered a loss in traffic.

The present passenger fares between Chicago, St. Louis and New York, said Mr. Blatterman, are based upon a schedule of so-called standard and differential fares which was first established in 1882 with a general objective of eliminating competition and affording prospective passengers with optional routes and rates which recognized differences in service and conveniences afforded; they were based chiefly on the relative running time between terminals, the relative number of trains operated and the location of terminals. Originally the differentials applied on business to and from New York but adjustments followed, taking in Boston and interior points where disparity of service existed between certain lines.

The New York differentials were the outcome of efforts made by the lines delivering their passengers in Hoboken and Jersey City to overcome the advantage held by the New York Central, and later the Pennsylvania, which had their terminals on Manhattan Island. In the adjustments differentials against these two lines were allowed from Buffalo, Pittsburgh of $1 to $3. These differential adjustments remained in effect in a general way until June, 1918, when the Railroad Ad-

ministration discontinued differential fares, making the rate uniform on all lines. The immediate result was a concentration of practically all of the travel between the important points on the standard lines. A curtailment in service by the differential lines immediately followed, resulting in inferior service and in a territory affecting a population of over 10,000,000 people, not including the larger terminals, and the discontinuation of service that had existed for many years.

When the differential of $2 between Chicago and New York was abolished, the differential lines lost 83 per cent of the business they had been carrying. The total revenue on interline business exchanged at the Niagara frontier averaged $1,041,087 per year from 1911 to 1914 on the Wabash, but was cut to an average of $200,750 for the years 1918 to 1920. This represented a loss in interline traffic of $841,137 per annum and also resulted in an additional loss of $150,000 on the local business of the Wabash to and from Buffalo. When the differentials were restored in 1922 a portion of the lost revenue was recaptured.

Testimony of Western Carriers

The western carriers presented testimony on the afternoon of the third day. J. B. Warren, assistant general passenger traffic manager of the Southern Pacific, said that during the year ending December 31, 1929, the Overland Limited, an extra fare train, carried 21,445 passengers westbound, with a revenue of $575,109 and 19,847 passengers eastbound, at a revenue of $548,957, while the Pacific Limited, a non-extra fare train, carried 63,751 passengers westbound at a revenue of $818,239, and 58,966 passengers eastbound at a revenue of $918,-091. During this time the extra fare revenue refunded on the Overland Linited amounted to 1.52 per cent.

W. F. Basinger, passenger traffic manager of the Union Pacific, also submitted extra fare train statistics. During the six months period, July, 1929 to December, 1929, the Overland Limited carried an average of 10.9 passengers per car, the percentage of berths occupied being 49.52. The San Francisco Limited, a non-extra fare train during the same period carried an average of 16.63 passengers per car, 65.01 per cent of the berths being occupied. Additional information regarding these trains was submitted by R. Thomson, assistant passenger traffic manager of the Chicago & North Western.

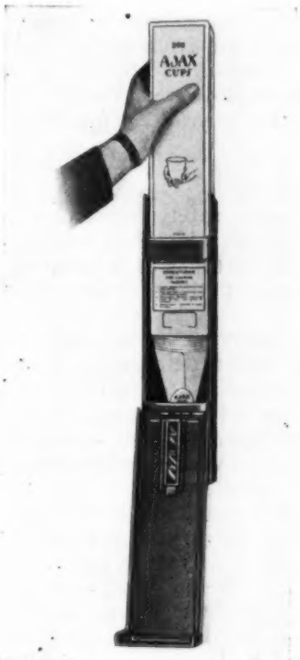
B. M. Bukey, assistant passenger traffic manager of the Atchison, Topeka & Santa Fe, testified for that road. He submitted figures showing the average earnings per train mile on extra fare trains. Following evidence submitted by the Southern, the Louisville & Nashville and the Illinois Central the hearing was adjourned to reconvene in New York on a date set later by the Commission, probably April 1.

* * *

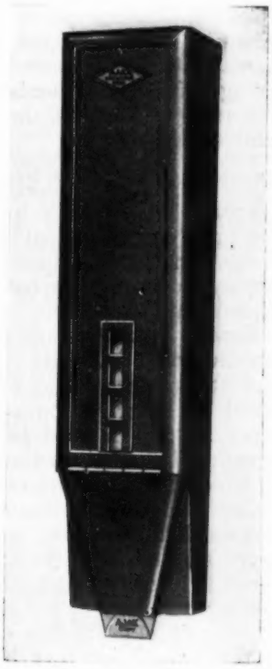
On the Wabash at Brunswick, Mo.

The Ajax Drinking Cup and Dispensing Cabinet

THE Logan Drinking Cup Company, Worcester, Mass., a division of the United States Envelope Company, has developed a compact dispensing cabinet for its Ajax drinking cups. These cups are elliptical in shape, with no side creases, so that they are open when withdrawn from the cabinet, naturally fitting the shape of the hand. The cabinet, 14¾ in. high,



The Loading Carton Eliminates Waste and Soiling of the Cups



The Dispensing Cabinet is Dust-proof and Convenient to Use

2¾ in. deep and 3⅜ in. wide, is made of pressed steel, is rugged and is finished with rust-proof enamel in any desired color to harmonize with car or office furniture.

The cups are furnished in cartridge loading cartons, 250 cups per carton, factory packed, equivalent to one filling of the cabinet. They are made of a substantial water-proof paper and prevented from leaking by a safety fold at the base of the cup. In loading the cabinet it is only necessary to insert the carton cartridge, open the flap and remove the carton shell, thus permitting the cups to fall into place without further handling before closing the cabinet. The cabinet is so constructed that it has no detachable parts to become lost or no mechanical parts to get out of order. The window in the front is closed with glass, so that it is dust-proof. The bottom of a cup projects below the bottom of the cabinet, where it can be grasped readily between thumb and finger, and easily removed.

A NEW MILK STATION is being erected at Paris (France) by the Paris-Orleans Railway. Milk will be handled into the city in insulated tank cars with a capacity of 6,000 liters (approximately 1,585 gal.) and pumped by compressed air into storage tanks holding more than 1,000,000 liters (264,175 gals.). Cans for city distribution will then be automatically filled from these tanks.

The Renaissance of Safety

THIS is the title which was adopted by J. J. Rhoads, superintendent of the Pennsylvania at Oil City, Pa., for an address which he gave in that city, on January 6, before a general city conference on prevention of accidents. Mr. Rhoads is superintendent of the Allegheny Division of the Pennsylvania, to which division has been awarded within the past year both the gold and the silver banners, given quarterly to that division of the road which makes the best safety record.

The number of employees on the Allegheny division is about 1800. This total is considerably less than the totals of previous years, there having been a steady reduction throughout the seven years from 1923. The increase in safety, however, is measurable by the percentage of the total number of employees who met with reportable accidents in the successive years. This statement shows:

1923.....	9.5	1926.....	5.8	1929.....	1.0
1924.....	8.2	1927.....	4.0		
1925.....	6.0	1928.....	2.6		

Telling of those activities of safety agents, officers and committees on his division which had resulted in the remarkable reductions in the totals of injuries to employees in the performance of their duties, Mr. Rhoads said, in part:

First, it was necessary to let every person working on the division know that there was a determined drive against accidents. This was not easily accomplished. It called for effective campaigning with meetings, newspaper articles in local papers, posters which attracted attention, bulletin board notices and various other means by which we could interest our workers.

One of the most difficult tasks was to make ourselves believe that, this time, we were in earnest and would never stop or let up in our efforts to reduce and keep personal injuries at a minimum. After we succeeded in putting that over in our own minds it was necessary to go out and let every man on the division, employees and officers alike, know that this safety drive was not an idle gesture on the part of the railroad company.

The creation of a common interest among employees, supervisors and officers alike, was our aim. The success of our efforts depended upon a complete understanding. Once we understood what the employees needed and the employee understood what we wanted, the rest was easy. With the barrier of misunderstanding removed between the employees, accidents began to decrease rapidly.

Instead of a few on the division trying to carry the whole load of responsibility it was divided equally among the entire personnel, and with each individual made to feel his responsibility and doing his part, the load was burdensome to only a few. It is to this group that the major portion of our effort is now directed. To those who will not get under their share of the load and those who are not fitted to carry out their part, more intensive effort in education is being applied. Some are transferred to less responsible positions and those whose mentality or physical condition render them incapable of mastering the hazards of their respective jobs, are being transferred to other lines of work.

False Friendship Removed

Once the employee began to shoulder his individual burden in safety, he tore down the barrier of false friendship, and demanded that the man beside him carry his share of the load. Lives and limbs and the welfare of women and children were more important than the peril of losing the friendship of some careless worker. They have turned on him. "Cut that out; I have a wife and children depending upon me and you have, too; and if you don't care, I do; and unless you work safely I'll see that the superintendent puts you where you won't hurt anybody."

Intensive and immediate action on every accident, prompt and thorough investigation to learn the cause, fix responsibility and take active steps to prevent recurrence are all very necessary.

Intelligent disciplinary action is very important. Each individual case, however, requires different and sometimes peculiar or singular action.

There must be strict honesty in reporting accidents. No employees on the Allegheny division are brought back to work with broken bones or injuries which prevent them from performing their regular duties. We have no special duty jobs for injured persons . . . .

While I was sitting in the office of the assistant trainmaster at Reynoldsville recently, a dozen employees in train and engine service who were waiting to go out on their runs came into the office to talk safety . . . . We had our last fatality more than 22 months ago. Every day we are doing something to prevent the next one from occurring. We cannot too often remind ourselves that the gospel of safety which we preach and practice is an inspiring and optimistic one. Safety pays in dollars; but far more important is the conservation of human life and limb and the increase of happiness and good cheer.

Remarkable Reductions

In his address Mr. Rhoads gave the following list of total annual injuries to employees as reported to the Interstate Commerce Commission since the beginning of 1923:

1923, injured, 268.					
1924, injured, 225.	Reduction from preceding year	16	per	cent.	
1925, injured, 157.	Reduction from preceding year	30	per	cent.	
1926, injured, 149.	Reduction from preceding year	5	per	cent.	
1927, injured, 99.	Reduction from preceding year	33	per	cent.	
1928, injured, 57.	Reduction from preceding year	42	per	cent.	
1929, injured, 19.	Reduction from preceding year	67	per	cent.	

Readers of the *Railway Age* will recall a brief item in the issue of March 16, last, page 635, showing remarkable reductions on the Allegheny Division in the total of deaths and injuries of trespassers walking on the tracks. The safety specialists of the railroad company conducted an extensive safety campaign in the public schools of the towns and cities along the line of the road.

* * *

Eastbound on the Nickel Plate, near Vermilion, Ohio

Looking Backward

Fifty Years Ago

The Great Western of Canada [now part of the Canadian National] will apply to the next session of the Canadian parliament for an act to authorize the company to establish among its officers and employees, and for their benefit, a superannuation fund.—*Railway Age,* February 19, 1880.

The New York Central and the New York, Lake Erie & Western [now the Erie] have reached an amicable arrangement for a division of western and New England business, which ensures the maintenance of fair rates between these corporations. It is reported that the Erie is to be allowed 20 per cent of the business while navigation is closed and 25 per cent during the remainder of the year.—*Railway Age,* February 19, 1880.

After discarding the Reagan bill the commerce committee of the House of Representatives voted to report the Henderson bill to the House as a substitute. The new bill provides for a National Board of Commissioners, with powers only to investigate and report, and to prescribe a system of reports for all railroads that operate in more than one state. The provisions of the bill are not to apply to shipments of less than a car load, nor to those railroads wholly within one state.—*Railroad Gazette,* February 20, 1880.

Twenty-Five Years Ago

W. J. Harahan, general manager of the Illinois Central, has been elected fourth vice-president, a new office, with jurisdiction over the operating department.—*Railway Age,* February 24, 1905.

Ten Years Ago

The Esch-Cummins bill, as revised by the conference committee of the Senate and the House, was submitted to the two houses of Congress on February 18. It was planned to allow four hours' debate and to pass it in the House on February 21 and to take it up immediately thereafter in the Senate.—*Railway Age,* February 24, 1920.

President Wilson has averted the strike of the maintenance of way employees ordered for February 17, but the troublesome and persistent question of railroad wages, like the rate question and several others, has been put over for settlement after the return of the railroads to private ownership. The conferees on the railroad bill have rewritten the labor provisions to insure that the wage question shall be taken care of by a proposed board of labor appeals.—*Railway Age,* February 20, 1920.

B. L. Bugg, federal manager of the Atlanta, Birmingham & Atlantic [now the Atlanta, Birmingham & Coast] and prior to federal control its general manager, has been elected president. Lawrence A. Downs, assistant general manager of the Illinois Central, has been elected vice-president and general manager of the Central of Georgia. L. W. Baldwin has been elected vice-president in charge of operation of the Illinois Central. Charles O. Jenks has been elected vice-president in charge of operation of the Great Northern. Elisha Lee and Benjamin McKeen have been elected regional vice-presidents of the Pennsylvania.—*Railway Age,* February 20, 1920.

TO CARRY ON THE CONSTRUCTION of the important Potosi-Sucre railway in Bolivia, the government has negotiated a loan of $1,500,000 from the Banco Central de Bolivia. Work is well advanced, but additional funds will be required to complete the line. Construction on the Cochabamba-Santa Cruz line has been temporarily suspended during the rainy season. Provided additional funds can be secured, it will be resumed in April.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Age Limitations in Industry; Statements of Fact and Opinion. This compilation takes up the extent and significance of the problem, the reasons for the existence of the problem, and suggested solutions. A selected bibliography is included. 34 p. Pub. by Industrial Relations Section, Princeton University, Princeton, N. J. *Apply.*

State Income Taxes. Vol. I—Historical Development. Reviews history of income taxation in Massachusetts (p. 5-18); Virginia (p. 19-25); Wisconsin (p. 26-36); Mississippi (p. 37-42); Oklahoma (p. 43-46); Connecticut (p. 47-50); Delaaware (p. 51-55); Montana (p. 56-58); Missouri (p. 59-65); New York (p. 66-78); North Dakota (p. 79-86); North Carolina (p. 87-93); South Carolina (p. 94-99); New Hampshire (p. 100-104); Tennessee (p. 105-107); Arkansas (p. 108-109); California (p. 110-114); Oregon (p. 115-117); Washington (p. 118-119); and Georgia (p. 120-121). Financial results of each are summarized. 121 p. Pub. by National Industrial Conference Board, Inc., New York City. $2.

Periodical Articles

The Car Loadings of the Canadian Railroads, by H. Mitchell. "A most useful index of the physical volume of Canadian production." Industrial Canada, February 1930, p. 63-64.

Electrification of Steam Railroads, by John E. McCallum. Summary, with "typical" examples of the progress of electrification, concluding in part "Electrification as an engineering possibility has been established for every type of traffic. As a commercial proposition its application is still definitely limited * * * American business men will do well to watch the unfolding of the Pennsylvania program * * * Quite possibly a new phase of electric railroading has made its début." (p. 234) Harvard Business Review, January 1930, p. 227-234.

The New Swiss Regulations Relating to the Gates and Signalling of Level [Grade] Crossings, by H. Hunziker. "These regulations settle in a uniform manner, and, for the whole extent of the country, the question of protecting level crossings." (p. 2837) Bulletin of the International Railway Congress Association, December 1929, p. 2837-2838.

Progress of Construction at Churchill. Illustrated description of development of the new port on Hudson Bay at terminus of Hudson Bay Railway. Industrial Canada, February 1930, p. 65.

Research Solving Transportation Problems, by E. W. Beatty. Research being done on the Canadian Pacific, and research by outside organizations in which the railway is interested. Industrial Canada, February 1930, p. 49-50.

Romance on the Rails, by W. O. McGeehan. What happened on two occasions when passengers on the Overland and on a French express obeyed "that impulse" and pulled the bell-cords. New York Herald-Tribune, February 11, 1930, p. 30.

Les Transports de Demain et Leurs Conséquences Économiques et Politiques, by L.-G. Numile. It is stimulating or startling, depending on one's current mood, to read Kipling's "With the Night Mail," with its board of control for world traffic, just before reading M. Numile's article. L'Économiste Français, February 1, 1930, p. 132-134.

Odds and Ends of Railroading

Tri-Lingual File Clerk

Miss Germaine Belzone, file clerk for the Pennsylvania at Chicago, claims the distinction of being the only railway file clerk who speaks three languages. Born in Marseilles, France, Miss Belzone speaks English, French and Italian fluently.

A Bad Smash

A recent accident at Harlingen, Tex., indicates that it is much safer for railroaders to stick to the railroad. Walter E. Nixon, engineman for the Gulf Coast Lines, was killed there recently when the automobile he was driving was struck by another, driven by his own fireman, W. J. Lee.

She Demands Speed

Bernice Jennings, the only woman relay operator on the Frisco, has a record of sending 92 messages an hour. But this doesn't satisfy this energetic young woman. She has taken up aviation, and is now a full-fledged pilot, probably the only woman railway employee who can claim this distinction.

A Slight Oversight

Mrs. Winifred Scott of Edinburgh gave birth to a child in a third class compartment of the famous English train, the Flying Scotsman, recently, while the train was making 60 miles per hour toward London. The trouble now is how to register the birth, as the law requires that births be registered in the parish where they occur. Nobody noticed just where the train was when the incident occurred.

Railless Railroading

It is related of a certain engineering officer, formerly of the A. E. F., that, in the course of an inspection tour in France, he noticed that most of the ties were scored. After several miles of line had been inspected, and the scored ties continued to be much in evidence, he remarked to the French officer accompanying him:

"How long did you run the railroad, anyhow, before you laid rails on the ties?"

Regular Movie Thrill

Engineman John Weir, of the Erie, raced his locomotive after a runaway caboose containing two men at Spring Valley, N. Y., recently, and with automatic coupling, caught the flying car. The caboose started down grade on the same track on which Weir's engine was standing. Weir put on all steam, fearing the caboose would crash into a passenger train coming into the station. The coupling effected at high speed, the engineer backed his engine and the retrieved caboose on to a siding in time for the passenger train to pass on schedule.

Small But Mighty

The smallest student ever to enter the University of Illinois is a member of the Illinois Central family. He is George P. Brown, 18-year-old son of Mrs. Edith Brown, office assistant to Dr. J. G. Baker, local surgeon for the Illinois Central at Mattoon, Ill. George has grown only about two inches since he was six years old, his present height being 48 inches, with a corresponding weight of 47½ lb. In grammar school George received one double promotion, and in high school he was an honor student. He plans to be an editorial writer and a novelist.

He Knows Now!

Hoyt Houston, Booneville, Ark., schoolboy, had heard that if one put his tongue to frosted steel it would stick. He didn't know, but was willing to try it. On his way to school he touched his tongue to a steel rail in the railroad yards. The idea worked. He heard an engine coming but managed to attract the attention of railroad employees before the engine got to him. The problem then was to get his tongue loose. It was solved by swiching an engine to a track opposite Hoyt, turning steam onto the rail and warming it sufficiently to release the boy's tongue.

Another Model-Club Member

F. B. Winslow, auditor of the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., is another recruit model builder. Mr. Winslow has turned out a hand-made locomotive, which, although it is only 40 in. long over all, weighs 27 lb., has a cylinder bore of only 11/16 in. and moves under its own steam. It is a miniature Pacific type oil-burner, built to a scale of one-half inch to the foot. It requires a track gage of 2¾ in., has 3½ in. drivers, 1¼ in. cylinder stroke, and its tubular boiler allows a steam pressure of 100 lb. to the square inch. Its tender has a capacity of a quart and a half of water and fuel.

Keeping Autos Out

The growing popularity of horseback riding, with the resultant establishment throughout the country of riding academies, may be a factor in the development of what is declared to be America's most fascinating and scenic area in the northwest corner of the United States in the Olympic Peninsula, according to W. C. Mumaw, of Aberdeen, Wash., president of the Olympic Chalet Company, who conferred with officials of the Northern Pacific recently. The Northern Pacific lines extend into the Olympic Peninsula. The area consists of 3,000 square miles, where spruce, hemlock, fir and cedar grow in the virgin forest. The chalet company is constructing chalets and shelter houses along the horseback trails. In this area, which is national forest, there are already 700 miles of horseback trails, which will be expanded to 1,200 miles. The question now is whether there should be further development by the construction of motor highways or whether entrance and passage through this area should be restricted to horseback riding. Already there is throughout the country a demand for preserving this region for horseback riding under almost ideal conditions.

Timetables

As all travelers in Great Britain know, the typical public timetable of each of the four British railway companies, far from being the single sheet or thin pamphlet now so common in this country, is a volume of considerable bulk, much more comparable, in dimensions, at least, to the "Official Guide"; while the volume of material and labor going into such a timetable makes the mere publication of it a far less insignificant phase of railway work than might be generally thought. In this connection, some statistics of the well-known "end-to end" type recently compiled by the Lancashire Daily Post are of considerable interest.

Each copy weighs 2¼ lb.

Seven million figures, letters and spaces, each of which is a separate unit, are used in composition.

The weight of the type used is 10,640 lb., in addition to two miles of brass rule.

The paper required for each issue weights 51 tons, which, if laid out in one length, four feet wide, would stretch for 420 miles.

Each copy is wire-stitched, the total length of wire used for each issue amounting to 15 miles.

Stereo plates to the number of 324 are cast, each measuring 15 in. by 12 in., and using in all 2¾ tons of metal.

Each reprint requires the handling of over 3,000,000 separate pieces of type, and the use of over half a ton of printers' ink.

In mailing each issue, 3,000 parcels are made up, weighing from 4½ to 50 lb. each, using seven miles of string and two tons of wrapping paper.

NEWS *of the* WEEK

The Boston & Maine's "Minute Man," with Locomotive "William Dawes," at Waltham, Mass.

THE INTERSTATE COMMERCE COMMISSION has further postponed from February 15 to March 15 the effective date of its order in the private car case.

REPRESENTATIVE O'CONNOR, of Oklahoma, has introduced in Congress a bill, H. R. 9684, to amend section 15a of the interstate commerce act so as to exempt short line railroads from recapture.

BILLS HAVE BEEN INTRODUCED in both houses of the Kentucky legislature which provide for the abolition of the present railroad commission in that state and the creation of a public utilities commission in its place.

THE NATIONAL SAFETY COUNCIL will hold its annual safety congress at Pittsburgh, Pa., beginning on September 29. The headquarters of the Council, now in Chicago, will be moved from 108 East Ohio street to Civic Opera building about March 1.

THE CAR FOREMEN'S ASSOCIATION OF ST. LOUIS will hold its next meeting at the American Annex Hotel, Sixth and Market streets, St. Louis, on Tuesday evening, March 4. The discussion will be on the changes in the interchange rules.

THE EASTERN CAR FOREMAN'S ASSOCIATION will hold its next regular meeting at 29 West Thirty-Ninth street, New York City, Room 502, on Friday evening, February 28. A. H. Faerber (N. Y. C.) will speak on safety first in shop operation.

THE NEW ENGLAND RAILROAD CLUB will hold its next meeting on Tuesday evening, March 11, at the Copley-Plaza Hotel, Boston. This will be the annual meeting at which officers for the ensuing year will be elected. There will be an address by A. K. Rowswell, humorist-philosopher, of Pittsburgh, Pa.

THE CANADIAN NATIONAL has completed arrangements whereby it has secured control of a building at 673 Fifth avenue, (northeast corner of Fifty-third street), New York City, through acquisition of existing leases. The New York offices of the C. N. R. will be moved to the new location in the late spring or early summer.

REPRESENTATIVE COOPER, of Ohio, has introduced in Congress a bill to increase the salary of the chief inspector of locomotives of the Interstate Commerce Commission from $6,000 to $7,500, that of the assistant chief inspectors from $5,000 to $6,000, and that of the district inspectors from $3,600 to $4,200.

IN AN ADDRESS in Springfield, Ill., on February 11, W. C. Hurst, vice-president of the Chicago & Illinois Midland, proposed the rehabilitation of the Chicago, Springfield & St. Louis, and stated that if residents along the line would furnish an adequate right of way, the C. & I. M. would spend approximately $2,000,000 to put the C. S. & St. L. in condition.

THE SENATE COMMITTEE on immigration on February 17 ordered a favorable report on a bill introduced by Senator Harris, of Georgia, to subject immigration from countries in North and South America, with the exception of Canada and Newfoundland, to the quota system. The purpose is to reduce the number of immigrants from Mexico and a similar bill has been the subject of hearings before a House committee.

Safety in Southern Shops

The Southern Railway reports that in the year 1929, five shop units, with a combined record of 6,732,253 man-hours worked, went through the year 1929 without a reportable injury to any employee.

Annual Meeting, Purchases and Stores Division, A. R. A.

The Purchases and Stores Division of the American Railway Association, W. Davidson, chairman; W. J. Farrell, secretary, has issued circular No. 220, announcing the eleventh annual meeting of the division, to be held at Atlantic City, N. J., June 18, 19 and 20, 1930.

The sessions will be held in the meeting hall of the new Municipal Auditorium, beginning at 9 a.m., Wednesday, June 18, 1930. In addition to the reports of the standing committees, there will be reports by special committees on 23 subjects of interest to members of Division VI.

Toronto Union Station

The Union passenger station of the Canadian National and the Canadian Pacific, at Toronto, Ont., which was opened for business on August 6, 1927, is now practically completed, the new high level tracks and platforms having just been finished. Six of these tracks are now in use and six more are to be brought into service within the present year. This station was described in the *Railway Age* of December 24, 1927.

A Traveling Beacon

The Pennsylvania plans to equip a passenger locomotive with a headlight so adjusted that the rays will be projected perpendicularly for about 700 ft., and to operate it in Ohio to determine its usefulness in preventing grade crossing accidents. It is believed that such a light will be seen by motorists at a much greater distance than one which shines on the track.

Medal to J. P. Clendennin

Upon recommendation of the Interstate Commerce Commission, President Hoover has awarded a medal of honor to J. P. Clendennin, of Wiggins, Miss., station agent at that point for the Illinois Central, who rescued a woman and child who had fallen in front of a train. Application for a medal in this case was filed by L. A. Downs, president of the Illinois Central. Thirty-four medals of this character have been awarded since the enactment of the medals of honor act in 1905.

The A. C. L.'s Centenary

The Atlantic Coast Line announces a centenary. It was on February 10, 1830, that citizens of Petersburg, Va., obtained from the General assembly of that state, a charter for the Petersburg Railroad, to extend from that city southward to some convenient point on the North Carolina line. This road, completed a few years after, to Blakely, Va., 59 miles, was one of the original links in what later became the Atlantic Coast Line. By the year 1900, about 100 railroads had been con-

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1929

Name of road	Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Detroit & Toledo Shore Line.....Dec.	50	$382,068	$.....	$387,369	$35,142	$29,877	$49,176	$111,566	$33,821	$259,140	66.90	$128,229	$109,338	$29,823	$99,892
12 mos.	50	4,856,043	4,946,190	480,168	432,634	467,710	1,210,201	266,184	2,853,622	57.7	2,092,568	1,700,693	739,901	1,143,275
Grand Trunk Western .....Dec.	345	953,947	172,186	1,215,309	171,566	389,603	38,542	574,609	70,210	1,359,341	103.6	—44,032	—83,044	170,285	141,205
12 mos.	345	18,346,026	2,098,952	21,705,545	3,186,493	4,554,522	523,869	7,448,486	784,909	16,574,323	76.3	5,131,222	4,065,007	2,878,245	3,413,095
Chi., Det. & Canada Gr. Tr. Jct..Dec.	59	196,948	724	233,705	26,702	14,425	4,814	108,644	4,621	159,188	68.1	74,517	62,219	34,762	106,850
12 mos.	59	3,285,131	13,970	3,835,378	262,708	173,560	56,862	1,180,226	45,692	1,718,772	44.8	2,116,606	1,981,100	1,619,754	1,834,051
Detroit, Grand Haven & Mil.....Dec.	192	271,158	27,762	344,235	56,868	54,834	13,336	250,137	19,935	394,073	114.5	—49,838	—80,266	169,425	51,394
12 mos.	192	7,719,628	281,283	8,626,444	870,300	725,891	167,138	3,324,966	218,781	5,271,016	61.1	3,355,428	3,171,546	1,794,964	1,868,318
Green Bay & Western .....Dec.	234	137,516	4,391	146,504	29,138	3,130	5,411	35,265	3,541	75,580	51.6	70,924	57,628	50,737	41,577
12 mos.	234	1,877,472	52,892	1,996,632	352,541	277,557	81,943	717,032	37,906	1,465,032	73.4	531,600	420,219	353,743	301,534
New Orleans Great Northern .....Dec.	276	197,448	17,189	225,363	69,685	58,347	14,540	94,530	13,524	250,594	111.2	—25,231	—24,597	—48,940	41,316
12 mos.	276	2,935,926	206,225	3,262,756	536,248	576,031	167,310	979,785	143,782	2,402,416	73.6	860,340	638,274	355,712	569,458
St. Joseph & Grand Island.....Dec.	258	241,984	9,857	268,988	42,337	33,554	3,376	103,556	15,574	206,547	76.8	62,441	53,807	36,747	65,519
12 mos.	258	3,615,624	125,589	3,931,177	602,065	504,787	39,924	1,309,041	191,711	2,655,678	67.2	1,295,499	1,055,728	767,570	771,179
.....Dec.	111	232,232	.....	234,695	37,740	42,202	449	49,053	1,187	130,631	55.7	104,064	91,301	68,780	90,959
Utah .....12 mos.	111	2,105,116	.....	2,111,702	303,014	431,595	4,536	447,392	58,819	1,265,356	59.9	846,346	692,658	601,215	349,561

solidated into the Atlantic Coast Line Railroad Company.

Safety Section Studies Train Accidents

The Committee on Education, of the Safety Section of the American Railway Association, E. R. Cott, chairman, has issued circular No. 253, containing that part of its "All the year—Every Year" safety program which is to be given special attention during the month of March.

The subject is train accidents, and the circular contains data concerning the causes of train accidents as shown in Accident Bulletin No. 97 of the Interstate Commerce Commission, which is for the year 1928. The damage to railway property by collisions and derailments in that year (not including loss and damage of freight or damages paid on account of personal injury) was about eighteen million dollars. The causes of train accidents—stated as to both collisions and derailments taken together—are given, as classified by the Interstate Commerce Commission, under four heads: a—negligence; b—defects in equipment; c—M. W. defects and d—miscellaneous.

Attention is called to the fact that for the eight months ending with August, 1929, the record of train accidents on American railroads shows no improvement over 1928. Discussing the varied kinds of negligence leading to collisions or derailments, the report cites certain obvious remedies; stricter examination of employees, better supervision by officers, and prompt disciplinary action.

Electrification of Lackawanna Progresses Rapidly

Two or three car loads of steel supports for the overhead power wires in connection with the electrification of the New York suburban lines of the Lackawanna have arrived and are being set in place daily. This work is about half completed at the Hoboken terminal and fully completed along the main line to East Orange, on a section west of Summit and on the line to Montclair. About one-half of the steel for the entire trackage to be electrified is now in place. The balance will be erected as fast as it is received from the mill. Four thousand tons or about 400 cars will be required to equip the 160 miles of track on 70 miles of road.

Few of these forms are exact duplicates, each being mainly individual and going into a specified location. The concrete foundations for these overhead structures are completed as far west as Morristown. This work will be pushed to completion as soon as frost is out of the ground.

The sub-power station buildings, located at Bergen Junction, Roseville, Summit, Denville and Bernardsville are ready for their equipment and the work of installing the transformers, rectifiers and switch boards will proceed without delay. The conduit installations have been started in the West End substation and the Grove Street tie station.

As they can be spared from service, the latest type of suburban coaches in lots of six or eight at a time, are sent to the shops, where the new vestibules and trap doors are being built in at the rate of one car per day, 24 of the 141 such cars already having been so equipped.

A sample motor car has been completed and the first completed motors and electrical equipment soon will be shipped for installation on this car.

Engineer to Study Sewer Pipe Loading

The Freight Container Bureau of the American Railway Association has been authorized to assign one of its engineers to a year's study of loading and bracing methods for sewer pipe, drain tile and allied products. A joint advisory committee has been appointed by R. H. Aishton, president of the association and E. C. Barker has been assigned to the study and is already at work. The co-operation of manufacturers has been solicited. The joint committee is composed of the following: Samuel Lynn, chairman of the Loading committee of the Transportation Division; W. C. Johnson, chairman of the Freight Claim Prevention committee, of the Freight Claim Division; F. W. B. Humes, chairman of the Freight Handling Service committee of the Transportation Division and superintendent of stations and transfers in the Eastern region for the Pennsylvania, and George Merki, manager of the Central Weighing and Inspection Bureau.

Sixty Men Instead of 387

A discussion on the advisability of establishing a joint interchange yard at Buffalo, N. Y., as a means of economy, the operation of the yard to be participated in by eight or ten railroads, was the feature of the December meeting of the Central Railway Club, at Buffalo. The subject was brought forward in a paper presented by A. F. Burke, trainmaster of the Buffalo Creek; and the marked saving which can be made by the use of car retarders appears to have been a chief element in his argument for the establishment of a single large yard to do work which is now scattered through 42 yards.

Mr. Burke finds that in the Buffalo district—not including the Black Rock exchange with Canada—the average number of freight cars interchanged daily is 5210, equal to 217 cars an hour. For the inspection of these cars, which is done at 42 different yards, 144 men are employed, making 1152 man-hours daily; and the interchange clerks number 243, equal to 1944 hours. The car inspectors attend to an average of 4.04 cars an hour and the clerks an average of less than three cars an hour. By centralizing the work, these men could accomplish very much more; inspectors working in pairs can inspect 60 cars an hour and a clerk can interchange 50 cars an hour.

To concentrate the distribution of 5210 cars in 24 hours, would require a receiving yard of 36 tracks, to hold 4000 cars. Of these tracks, 18 should connect up with a lead to hump retarders. Beyond the hump there would be needed six groups of five tracks each and four groups of three tracks each as a classification yard. This latter yard would be duplicated to serve

for an outlet for the other 18 receiving yard tracks, thus providing two humps from one receiving yard.

For a yard of this kind, 36 inspectors would be sufficient, as compared with 144 now employed in the Buffalo district; and 24 clerks would take the place of the 243 now employed. There would be savings also in locomotive power, in yard crews and in supervisory staffs. Some of the present yards, used only for interchange, could be discontinued.

Aside from the question of economy in interchange, which was the main theme of Mr. Burke's paper, he called attention to probable economies in weighing freight in adjustment of loads, in transfers and in repairs.

Commercial Stocks of Coal

Consumers' stocks of bituminous coal on January 1 amounted to 40,300,000 tons, according to a study by the Bureau of Mines. This is an increase of 2,800,000 tons since October 1. During October production was considerably in excess of consumption, and stocks increased by 2,300,000 tons, reaching 39,800,000 tons on November 1. Thereafter production declined and for the remainder of the year was only slightly higher than the rate of consumption. The present stocks are less than on any corresponding date since 1923.

The average weekly rate of consumption during November and December was 10,782,000 tons. Exports averaged 330,000 tons. In comparison with the corresponding period of 1928, the rate of consumption plus exports shows an increase of 148,000 tons a week, 1.3 per cent.

Stocks of railroad coal also increased during the last quarter of 1929. The American Railway Association reports that on January 1 there was 7,442,000 tons on hand. In comparison with the quantity on hand three months before, this is an increase of 703,000 tons but, as shown by the table below, is less than the tonnage held by the railroads on comparable dates in recent years.

January 1, 1922	15,458,000
January 1, 1923	6,757,000
January 1, 1924	19,368,000
January 1, 1925	12,156,000
January 1, 1926	11,066,000
January 1, 1927	13,499,000
January 1, 1928	14,729,000
January 1, 1929	9,237,000
October 1, 1929	6,739,000
January 1, 1930	7,442,000

"What Is Wrong With This Picture?"

The query, "What is wrong with this picture?" familiar nowadays to every newspaper reader, is the text of a little lecture which is embodied in a letter recently sent by F. L. Dobson, superintendent of the Pittsburgh Division of the Pennsylvania, to his trainmasters and to those others of his subordinates who act in a supervisory capacity.

The occasion of the letter was the issuance of the new safety rules of the Pennsylvania, (*Railway Age,* November 23, page 1203) the examinations on which had been completed. Referring to the truth of common experience that "people see things but do not observe them" the letter reminds the recipients of the necessity that would now be upon them, in order to carry out a consistent policy of discipline, of observing a fair percentage of the infractions of the rules. The rules in this new code of the Pennsylvania call for appropriate discipline in case of disobedience, the same as in the case of other rules of the operating department.

The familiar newspaper picture referred to shows a scene in which a certain number of errors have been introduced by the artist, and the reader is told to discover them.

Continuing, Mr. Dobson says: "As a supervisor, while on the job, you should habituate yourself to stop frequently and ask yourself 'What is wrong with this picture?' Notice closely the movements, actions, etc., of each employee within your field of vision, with a view of recognizing clearly if any improper action or movement is being made; if any tool or material is improperly placed; if any parts of the equipment, building or property are in any way defective or out of order.

"Remember you are a key man, a leader, and that the men under you recognize that fact; look to you for leadership. While they may complain and remonstrate with you for any discipline, they in their hearts appreciate the fact that you are leading them and respect you the more because of it."

Another officer of the Pennsylvania, commenting on Mr. Dobson's letter, quotes a well-known leader in the Safety Section, A. R. A., as illustrating the appropriateness of this injunction thus: "I have as a roadmaster stood at the rear of a train riding over my district at a time when everything was going along all right, and I saw nothing that struck me as being wrong, when if the division superintendent or general superintendent came back and stood beside me, I was stimulated to a much greater concern about things that he might criticize. Immediately I could see things that ought to be fixed differently, or improper activities of men, which had not occurred to me before, when I was alone. The pressure of the higher officer had stimulated me to look closely and see 'what was wrong with this picture.'"

Revenues and Expenses for 1929

The 180 Class I railroads in 1929 had a net railway operating income of $1,274,774,188, which was a return of 4.95 per cent on their property investment, according to reports filed by the carriers with the Bureau of Railway Economics. Their net in 1928 was $1,194,487,805, or 4.72 per cent.

The effect of increased economies and efficiency in operation is illustrated by the fact that the ratio of expenses to revenues was lower than in any year since 1917, namely, 71.69 as compared with 72.41 in 1928 and 74.54 in 1927.

Compared with an increase in 1929 of 3.1 per cent over 1928 in the volume of freight traffic, there was an increase of 2.6 per cent in revenues and an increase of 1.6 per cent in operating expenses. Transportation expenses in 1929 were only four-tenths of one per cent above those for 1928. Such expense in 1929 amounted to $2,109,519,747 an increase of $7,794,109. Expenditures for maintenance of way and structures in 1929 amounted to $862,701,113, an increase of $14,388,084 or 1.7 per cent compared with 1928, while expenditures for maintenance of equipment amounted to $1,211,342,962, an increase of $35,310,666 or 3.0 per cent.

Passenger traffic in 1929 was the smallest for any year since 1909. Passenger revenues amounted to $873,582,447, a decrease of $28,589,914 or 3.2 per cent compared with 1928.

Operating revenues in 1929 amounted to $6,352,354,834, compared with $6,189,917,190 in 1928, an increase of 2.6 per cent. For 1929 they included approximately $37,600,000 of retroactive mail revenue received in payment for mail traffic handled during the years 1925 to 1928. Operating expenses in 1929 totaled $4,553,968,834, compared with $4,482,041,318 in 1928, an increase of 1.6 per cent.

Class I railroads in 1929 paid $402,630,307 in taxes, an increase of $7,050,258, or 1.8 per cent, over their total tax bill in 1928. Thirteen Class I railroads operated at a loss in 1929, of which five were in the Eastern district, two in the Southern and six in the Western.

Net railway operating income by districts in 1929, with the percentage of return based on property investment was as follows:

New England Region	$54,751,656	5.89%
Great Lakes Region	212,440,179	4.85%
Central Eastern Region	288,420,048	5.47%
Pocahontas Region	93,316,870	8.75%
Total Eastern District	648,928,753	5.57%
Total Southern District	133,004,264	4.04%
Northwestern Region	146,736,351	4.15%
Central Western Region	239,613,763	4.93%
Southwestern Region	106,491,057	4.41%
Total Western District	492,841,171	4.56%
United States	$1,274,774,188	4.95%

For December, the net railway operating income amounted to $72,227,197, at the annual rate of 3.89 per cent on property investment. In December, 1928, the net was $94,691,332, or 5.19 per cent. Operating revenues for December amounted to $468,878,962, compared with $496,766,122 in December, 1928, or a decrease of 5.6 per cent. Operating expenses totaled $362,814,311, compared with $358,323,820 in the same month the year before, or an increase of 1.3 per cent.

The net railway operating income in the Eastern district in 1929 totaled $648,928,753, at the rate of 5.57 per cent. In 1928, their net was $596,518,256, or 5.22 per cent. Operating revenues in 1929 totaled $3,166,323,290, an increase of 4 per cent above 1928, while operating expenses totaled $2,270,977,585, an increase of 2.9 per cent. For December the net railway operating income was $35,646,535, compared with $51,127,772 in December, 1928.

Class I railroads in the Southern district in 1929 had a net of $133,004,264, at the rate of 4.04 per cent. In 1928 it amounted to $133,769,315, a return of 4.14 per cent. Operating revenues in the Southern district amounted to $769,102,136, a decrease of six-tenths of one per cent, while operating expenses totaled $580,115,099, a decrease of five-tenths of one per cent. The net railway operating income in the Southern district in December amounted to $10,912,277, while in the same month in 1928 it was $12,526,700.

Railroads in the Western district in 1929 had a net railway operating income of

(Continued on page 492)

Operating Statistics of Large Steam Railways—Selected Items for December, 1929, Comp

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross. Excluding locomotives and tenders	Ton-miles (thousands): Net. Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1929	407	201,532	215,901	23,879	4,514	63.9	247,577	91,119	101	21	17.3	27
1928	407	194,198	204,721	19,445	4,719	65.1	240,536	90,703	106	19	15.5	32
Boston & Maine.....1929	2,059	374,147	433,830	57,291	11,630	65.3	640,617	241,032	249	56	18.3	48
1928	2,074	411,284	487,620	57,436	12,338	67.4	649,072	249,632	284	42	12.9	62
N. Y., New H. & Hart...1929	2,106	470,203	540,324	37,922	14,428	62.3	826,405	323,331	286	52	15.5	31
1928	2,104	520,075	579,921	39,005	15,353	65.2	840,056	336,524	293	68	18.8	33
Great Lakes Region:												
Delaware & Hudson.....1929	875	337,291	451,018	50,961	10,206	61.0	659,402	313,220	236	37	13.4	75
1928	875	324,892	434,141	45,066	9,828	60.4	630,351	289,599	236	34	12.6	77
Del., Lack. & Western....1929	998	483,115	535,025	62,118	15,429	63.9	919,145	383,716	230	55	19.3	24
1928	998	536,780	606,161	66,537	16,759	64.4	978,885	404,164	236	58	19.7	8
Erie (inc. Chi. & Erie)....1929	2,316	864,670	926,218	69,946	34,239	60.4	2,147,307	870,811	424	88	17.3	64
1928	2,317	915,886	988,238	78,563	37,924	61.3	2,333,942	960,807	404	110	21.5	28
Lehigh Valley 1929	1,343	520,061	569,711	68,230	15,117	62.2	944,738	410,720	264	70	21.1	25
1928	1,343	545,133	596,162	63,796	16,379	62.9	978,735	411,312	330	83	20.1	27
Michigan Central 1929	1,820	495,628	496,120	20,218	14,982	58.3	900,906	325,357	195	41	17.5	39
1928	1,822	523,606	531,431	16,961	17,471	59.2	1,009,560	355,601	207	45	17.9	39
New York Central.....1929	6,467	2,122,923	2,341,678	193,081	70,833	58.6	4,589,143	1,954,864	983	304	23.6	184
1928	6,459	2,043,590	2,306,272	161,287	74,387	59.2	4,698,607	1,975,538	946	394	29.4	158
New York, Chi. & St. L...1929	1,665	645,678	652,385	6,648	18,652	57.4	1,127,387	417,415	209	48	18.7	29
1928	1,665	644,247	650,805	7,116	20,161	60.1	1,177,599	436,442	225	55	19.7	54
Pere Marquette 1929	2,178	400,514	403,934	3,135	8,885	58.0	576,447	239,961	173	28	14.0	28
1928	2,179	417,226	420,472	4,515	9,960	59.0	616,613	255,729	179	30	14.4	16
Pitts. & Lake Erie.....1929	231	125,775	128,698	1,771	4,044	58.9	331,013	183,880	50	14	21.2	12
1928	231	122,261	124,515	1,758	3,961	57.4	327,250	179,696	57	9	14.2	15
Wabash 1929	2,497	790,737	836,235	14,696	20,982	59.8	1,266,889	458,597	290	66	18.5	25
1928	2,497	814,133	845,998	12,095	22,673	59.9	1,366,446	509,415	296	67	18.4	31
Central Eastern Region:												
Baltimore & Ohio.....1929	5,541	1,756,419	2,101,183	161,947	48,618	58.1	3,418,226	1,563,511	1,053	175	14.3	248
1928	5,536	1,939,769	2,317,474	162,785	54,016	58.6	3,738,452	1,718,009	1,025	213	17.2	169
Central of New Jersey.....1929	691	261,443	283,312	43,370	7,152	55.0	514,784	241,565	162	39	19.6	10
1928	691	266,284	287,139	44,037	7,314	55.6	510,958	236,207	186	23	11.0	21
Chicago & Eastern Ill.....1929	946	255,344	256,512	3,125	5,974	60.9	400,350	183,540	95	64	40.3	22
1928	945	266,289	268,017	3,481	6,512	60.1	429,767	196,923	97	69	41.4	18
Clev., Cin., Chi. & St. L...1929	2,366	785,708	817,351	18,121	21,881	57.8	1,503,253	688,418	287	128	30.9	11
1928	2,371	748,023	772,872	16,703	22,056	58.6	1,475,668	670,598	315	119	27.4	15
Elgin, Joliet & Eastern...1929	453	133,904	144,285	7,337	3,355	58.6	268,351	136,730	75	18	19.0	3
1928	452	139,229	148,783	7,153	3,741	60.8	290,230	151,010	80	13	13.7	...
Long Island 1929	400	45,615	49,578	14,646	493	54.1	33,802	12,129	49	6	10.1	5
1928	396	44,360	48,363	14,382	531	54.4	36,416	13,496	49	7	12.9	3
Pennsylvania System.....1929	10,738	3,753,886	4,328,911	426,278	120,140	59.7	8,280,902	3,730,093	2,390	373	13.5	498
1928	10,749	3,910,410	4,474,532	408,417	126,496	60.8	8,586,478	3,922,791	2,717	348	11.4	672
Reading 1929	1,451	648,530	707,971	53,063	16,492	57.3	1,221,342	603,250	342	56	14.0	32
1928	1,437	675,573	742,015	53,801	17,202	57.1	1,257,815	619,020	349	75	17.7	16
Pocahontas Region:												
Chesapeake & Ohio.....1929	2,735	1,103,137	1,171,345	45,949	36,032	54.6	3,015,007	1,622,502	510	90	15.0	68
1928	2,730	1,105,917	1,189,201	45,270	34,471	53.8	2,853,745	1,503,410	530	99	15.7	53
Norfolk & Western.....1929	2,230	835,144	953,457	52,548	28,483	56.4	2,488,649	1,337,104	454	45	9.1	86
1928	2,230	825,680	969,430	36,710	28,547	56.9	2,415,126	1,283,551	496	58	10.5	131
Southern Region:												
Atlantic Coast Line.....1929	5,154	643,395	644,295	10,407	15,320	59.5	861,604	299,109	403	51	11.2	88
1928	5,136	665,052	667,873	8,838	16,660	56.9	962,655	339,986	442	44	8.9	89
Central of Georgia.....1929	1,900	240,825	242,889	5,014	5,438	66.5	302,253	119,745	132	19	12.6	6
1928	1,898	256,559	258,280	4,455	6,140	67.5	336,227	134,849	135	17	11.2	11
Ill. Cent. (inc. Y. & M. V.)1929	6,694	1,937,894	1,949,824	30,334	46,066	56.6	3,289,717	1,371,671	725	117	13.9	9
1928	6,713	2,001,102	2,010,368	29,325	50,922	58.4	3,513,105	1,495,085	744	112	13.1	15
Louisville & Nashville.....1929	5,247	1,564,903	1,661,938	50,529	30,748	56.2	2,231,058	1,058,294	546	142	20.6	32
1928	5,247	1,588,967	1,659,982	54,774	32,308	57.1	2,277,532	1,081,228	612	114	15.7	48
Seaboard Air Line.....1929	4,475	549,676	562,582	7,793	13,487	60.3	806,750	291,835	267	48	15.2	11
1928	4,475	574,006	584,761	7,314	14,410	60.8	846,720	310,651	253	58	18.6	6
Southern 1929	6,679	1,379,702	1,409,302	29,281	30,958	60.0	1,824,762	712,330	838	131	13.5	164
1928	6,679	1,445,506	1,476,371	32,319	33,923	60.3	1,997,338	785,448	848	121	12.5	116
Northwestern Region:												
Chi. & North Western....1929	8,459	1,304,914	1,373,173	25,224	31,997	62.1	1,970,937	801,543	792	81	9.3	110
1928	8,463	1,318,292	1,383,762	25,273	31,969	62.3	1,942,890	769,025	766	112	12.7	145
Chi., Milw., St. P. & Pac..1929	11,244	1,591,262	1,714,264	90,369	41,864	60.7	2,629,276	1,096,262	790	156	16.4	211
1928	11,248	1,619,992	1,741,630	94,058	44,165	61.5	2,701,446	1,129,845	792	158	16.7	193
Chi., St. P., Minn. & Om..1929	1,724	332,903	365,393	17,707	6,381	63.6	388,964	168,529	152	23	13.3	23
1928	1,724	310,411	331,935	14,757	6,165	64.7	356,457	151,563	161	25	13.6	27
Great Northern 1929	8,339	756,836	780,204	48,892	23,122	71.9	1,309,868	622,355	457	156	25.4	67
1928	8,381	784,591	810,418	58,631	26,110	71.8	1,489,092	718,867	504	133	20.8	83
Minn., St. P. & S. St. M...1929	4,388	433,631	446,622	4,801	10,686	65.9	587,631	248,933	183	46	20.0	25
1928	4,357	446,495	460,919	4,718	11,647	66.9	631,369	272,935	219	42	16.0	25
Northern Pacific 1929	6,468	695,303	735,044	43,691	20,435	69.6	1,168,305	525,258	426	112	20.8	61
1928	6,477	709,105	748,904	45,439	22,411	72.8	1,230,600	557,935	446	118	21.0	56
Oreg.-Wash. R. R. & Nav..1929	2,246	186,512	194,990	10,935	4,919	69.3	292,531	133,287	127	18	12.7	40
1928	2,246	196,413	205,408	13,665	5,522	72.7	325,383	152,650	127	16	11.2	22
Central Western Region:												
Atch., Top. & S. Fe (incl. P. & S. F.).....1929	11,223	1,739,843	1,877,048	84,039	50,380	59.9	3,143,243	1,125,488	786	150	16.1	163
1928	11,186	1,762,478	1,922,781	95,527	53,938	61.2	3,315,141	1,181,806	840	168	16.7	188
Chicago & Alton.....1929	1,000	257,744	269,177	3,086	5,742	57.2	369,034	139,406	131	16	10.7	31
1928	1,000	286,770	307,057	3,142	6,783	57.3	434,854	175,565	122	28	18.8	15
Chi., Burl. & Quincy.....1929	9,309	1,416,164	1,487,280	58,798	41,395	59.2	2,634,099	1,208,071	657	157	19.3	17
1928	9,317	1,437,572	1,488,442	55,952	43,167	62.2	2,621,102	1,205,688	719	165	18.6	54
Chi., Rock I. & Pacific....1929	7,592	1,448,694	1,513,825	14,236	31,485	55.6	2,058,019	779,084	535	113	17.4	47
1928	7,564	1,433,659	1,492,693	17,469	33,643	59.0	2,099,293	824,631	541	132	19.6	45
Denver & R. G. Wn.....1929	2,564	291,561	343,974	58,263	7,436	60.0	477,280	206,543	219	51	18.9	19
1928	2,563	268,514	313,622	49,109	7,121	67.0	429,482	198,752	209	50	19.2	28
Oregon Short Line.....1929	2,539	273,582	283,541	20,652	8,089	66.4	499,123	220,320	183	14	6.9	67
1928	2,539	309,983	322,765	33,817	8,986	66.7	560,671	250,186	194	11	5.4	67
So. Pacific—Pacific Lines..1929	8,969	1,420,272	1,535,209	205,256	41,125	61.6	2,600,941	970,627	717	182	20.2	139
1928	8,740	1,471,822	1,599,545	199,379	42,721	61.5	2,671,784	1,000,975	721	202	21.9	93
Union Pacific 1929	3,765	883,885	904,281	39,490	31,846	70.5	1,764,083	713,853	434	35	7.5	154
1928	3,765	965,901	992,724	60,128	34,809	64.6	2,047,477	787,809	406	51	11.1	99
Southwestern Region:												
Gulf, Colo. & S. Fe.....1929	1,932	242,818	258,095	5,596	8,028	60.9	512,227	216,663	112	19	14.3	19
1928	1,933	248,885	259,055	6,705	8,271	61.4	515,754	218,078	132	15	10.2	41
Mo.-Kans.-Texas Lines.....1929	3,176	396,307	402,862	7,987	11,979	55.7	761,184	284,051	195	48	19.9	91
1928	3,176	460,257	470,268	11,055	14,404	56.3	903,541	347,949	187	58	23.6	60
Missouri Pacific 1929	7,424	1,474,258	1,525,142	42,183	37,399	59.7	2,393,575	988,364	564	69	10.9	152
1928	7,433	1,386,170	1,439,759	44,017	38,290	61.5	2,381,555	1,010,287	534	87	14.0	15
St. Louis-San Francisco....1929	5,211	819,612	832,972	9,759	17,548	58.2	1,098,811	424,569	373	61	14.1	27
1928	5,212	847,097	863,333	8,807	18,270	57.1	1,153,220	456,024	399	77	16.2	31
Texas & New Orleans.....1929	4,709	732,386	733,644	2,186	14,921	59.4	946,092	355,178	285	43	13.1	53
1928	4,708	764,575	766,276	2,680	15,836	63.0	947,611	372,567	267	66	19.8	32
Texas & Pacific.....1929	1,950	464,642	464,642	4,564	10,875	55.6	723,732	256,116	204	18	7.9	18
1928	2,015	569,336	569,336	4,009	13,835	55.3	945,480	354,816	200	15	7.1	13

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

ared with December, 1928, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany.....1929	3,999	3,805	7,804	6.2	18,099	1,228	452	20.2	377	29.2	7,220	186	63.4
1928	3,224	4,653	7,877	4.6	17,520	1,239	467	19.2	371	29.7	7,188	187	57.9
Boston & Maine.....1929	8,812	10,462	19,274	2.5	21,382	1,712	644	20.7	403	29.8	3,776	122	52.1
1928	10,443	11,669	22,112	2.8	20,543	1,578	607	20.2	364	26.7	3,883	119	54.0
N. Y., New H. & Hart..1929	17,533	14,887	32,420	9.7	22,867	1,758	688	22.4	322	23.0	4,953	121	55.1
1928	15,863	16,604	32,467	10.1	21,372	1,615	647	21.9	334	23.4	5,160	120	55.3
Great Lakes Region:													
Delaware & Hudson.....1929	9,292	5,367	14,659	4.2	24,121	1,955	929	30.7	689	36.8	11,548	141	59.3
1928	9,475	5,892	15,367	3.2	23,757	1,940	891	29.5	698	34.2	10,677	146	57.3
Del., Lack. & Western...1929	17,507	7,076	24,583	5.0	24,096	1,903	794	24.9	504	31.7	12,401	157	67.7
1928	17,127	7,989	25,116	3.7	23,131	1,824	753	24.1	519	33.4	13,062	147	73.9
Erie (inc. Chi. & Erie)..1929	34,688	16,930	51,618	3.0	33,136	2,483	1,007	25.4	544	35.4	12,129	124	62.8
1928	32,121	19,756	51,877	3.9	33,368	2,548	1,049	25.3	597	38.5	13,378	122	67.0
Lehigh Valley 1929	19,720	9,074	28,794	6.2	24,560	1,817	790	27.2	460	27.2	9,866	169	61.6
1928	22,403	9,618	32,021	9.0	24,746	1,795	755	25.1	414	26.3	9,876	164	51.5
Michigan Central.....1929	26,317	13,580	39,897	3.2	30,124	1,818	656	21.7	263	20.8	5,768	127	70.6
1928	22,009	13,954	35,963	5.5	31,283	1,928	679	20.4	319	26.5	6,296	118	70.1
New York Central.....1929	76,418	62,967	139,385	4.7	29,196	2,162	921	27.6	452	28.0	9,751	120	63.5
1928	75,653	66,082	141,735	5.1	31,379	2,299	967	26.6	450	28.6	9,866	116	59.4
New York, Chi. & St. L..1929	14,872	9,528	24,400	6.7	25,052	1,746	646	22.4	552	42.9	8,088	120	82.7
1928	14,342	10,006	24,348	6.1	26,450	1,828	677	21.6	578	44.4	8,457	115	75.9
Pere Marquette 1929	12,710	7,315	20,025	3.6	20,453	1,439	599	27.0	387	24.7	3,554	118	65.4
1928	10,951	7,209	18,160	4.2	20,148	1,478	613	25.7	454	30.0	3,787	111	65.5
Pitts. & Lake Erie.....1929	16,221	6,276	22,497	6.6	31,245	2,632	1,462	45.5	264	9.8	25,648	120	66.1
1928	14,166	8,376	22,542	10.7	30,644	2,677	1,470	45.4	257	9.9	25,064	123	61.6
Wabash 1929	18,355	12,191	30,546	1.8	26,680	1,602	580	21.9	484	37.1	5,925	137	77.2
1928	15,249	12,209	27,458	2.9	27,703	1,678	626	22.5	598	44.5	6,581	135	76.4
Central Eastern Region:													
Baltimore & Ohio.....1929	74,582	26,588	101,170	4.1	22,825	1,946	890	32.2	499	26.7	9,103	165	59.4
1928	73,549	28,531	102,080	4.8	22,444	1,927	886	31.8	543	29.1	10,010	164	64.6
Central of New Jersey...1929	17,678	10,227	27,905	4.8	23,796	1,969	924	33.8	279	15.0	11,285	154	52.4
1928	18,062	11,280	29,342	5.9	21,698	1,919	887	32.3	260	14.5	11,027	169	51.1
Chicago & Eastern Ill....1929	12,620	3,875	16,495	42.6	24,760	1,568	719	30.7	359	19.2	6,257	141	52.7
1928	13,083	3,971	17,054	37.6	24,352	1,614	740	30.2	372	20.5	6,721	143	52.9
Clev., Cin., Chi. & St. L..1929	26,000	20,132	46,132	3.9	27,684	1,913	876	31.5	481	26.5	9,386	131	65.0
1928	22,815	19,149	41,964	4.6	27,987	1,973	896	30.4	515	28.9	9,123	126	58.7
Elgin, Joliet & Eastern..1929	9,820	6,882	16,702	4.4	13,629	2,004	1,021	40.8	264	11.1	9,732	152	52.6
1928	9,323	6,884	16,207	4.4	15,612	2,085	1,085	40.4	301	12.2	10,781	140	54.1
Long Island 1929	772	4,590	5,362	1.3	5,448	741	266	24.6	73	5.5	979	393	37.9
1928	1,625	4,077	5,702	2.2	8,127	821	304	25.4	76	5.5	1,100	407	36.1
Pennsylvania System.....1929	222,604	68,975	291,579	3.9	26,650	2,206	994	31.0	413	22.3	11,205	142	55.5
1928	215,061	78,767	293,828	5.8	26,333	2,196	1,003	31.0	431	22.8	11,773	136	51.4
Reading 1929	29,660	13,945	43,605	4.6	20,889	1,883	930	36.6	446	21.3	13,411	159	61.7
1928	28,894	15,875	44,769	3.9	20,926	1,862	916	36.0	446	21.7	13,898	159	60.5
Pocahontas Region:													
Chesapeake & Ohio.....1929	32,629	9,463	42,092	2.1	34,664	2,733	1,471	45.0	1,243	50.6	19,135	97	65.5
1928	32,691	8,921	41,612	2.1	33,400	2,580	1,359	43.6	1,165	49.7	17,763	100	63.4
Norfolk & Western.....1929	32,019	7,641	39,660	1.0	41,768	2,980	1,601	46.9	1,088	41.1	19,342	134	65.0
1928	31,100	8,052	39,152	1.0	40,700	2,925	1,555	45.0	1,058	41.3	18,566	141	58.5
Southern Region:													
Atlantic Coast Line.....1929	25,707	8,300	34,007	3.8	20,184	1,339	465	19.5	284	24.4	1,872	118	46.6
1928	23,837	10,164	34,001	6.3	20,092	1,447	511	20.4	323	27.8	2,136	115	44.9
Central of Georgia.....1929	5,623	3,095	8,718	5.3	18,662	1,255	497	22.0	443	30.3	2,033	146	53.0
1928	4,977	4,244	9,221	4.9	18,980	1,311	526	22.0	472	31.8	2,292	143	55.8
Ill. Cent. (inc. Y.&M. V.)1929	44,689	19,149	63,838	3.6	23,470	1,698	708	29.8	693	41.1	6,610	149	75.9
1928	42,484	22,321	64,805	3.4	24,375	1,756	747	29.4	744	43.4	7,185	142	76.9
Louisville & Nashville....1929	46,536	12,558	59,094	8.9	19,301	1,426	676	34.4	578	29.9	6,506	158	80.3
1928	44,699	14,903	59,602	9.6	18,757	1,433	680	33.5	585	30.6	6,647	155	76.1
Seaboard Air Line.....1929	16,570	7,361	23,931	5.7	19,683	1,468	531	21.6	393	30.2	2,104	136	58.4
1928	15,826	9,745	25,571	5.9	19,316	1,475	541	21.6	392	29.9	2,239	136	61.5
Southern 1929	52,355	15,239	67,594	12.3	18,775	1,323	516	23.0	340	24.6	3,441	169	47.9
1928	49,127	17,029	66,156	9.0	18,848	1,382	543	23.2	383	27.4	3,794	167	50.2
Northwestern Region:													
Chi. & North Western...1929	50,051	26,319	76,370	6.3	19,738	1,510	614	25.0	339	21.8	3,057	150	51.6
1928	47,950	27,251	75,201	6.0	20,073	1,474	583	24.0	330	22.0	2,931	143	51.8
Chi., Mil., St. P. & Pac..1929	55,548	19,455	75,003	2.7	22,121	1,652	689	26.2	471	29.7	3,145	145	61.6
1928	52,491	20,778	73,269	2.9	22,326	1,668	697	25.6	497	31.6	3,240	140	62.3
Chi., St. P., Minn. & Om..1929	2,630	9,878	12,508	7.2	15,183	1,168	506	26.4	435	25.9	3,154	145	70.5
1928	2,835	8,786	11,621	6.2	15,316	1,148	488	24.6	421	26.4	2,837	140	60.1
Great Northern 1929	41,566	10,425	51,991	4.3	22,023	1,731	822	26.9	386	19.9	2,407	162	43.6
1928	40,654	13,271	53,925	4.0	22,917	1,898	916	27.5	430	21.7	2,767	154	44.1
Minn., St. P. & S. St. M..1929	19,922	4,339	24,261	2.8	17,422	1,355	574	23.3	332	21.6	1,830	124	63.6
1928	19,444	4,736	24,180	3.5	17,627	1,414	611	23.4	364	23.3	2,021	120	57.8
Northern Pacific.....1929	39,697	6,772	46,469	7.3	23,139	1,680	755	25.7	365	20.4	2,620	172	46.6
1928	37,685	9,296	46,981	6.4	23,474	1,735	787	24.9	383	21.1	2,779	161	45.4
Ore.-Wash. R.R. & Nav..1929	7,925	3,520	11,445	5.1	21,904	1,568	715	27.1	376	20.0	1,915	175	45.7
1928	7,848	3,820	11,668	6.1	22,124	1,657	777	27.6	422	21.0	2,193	175	49.5
Central Western Region:													
Atch., Top. & S. Fe (incl. 1929	63,461	17,753	81,214	6.1	28,321	1,807	647	22.3	447	33.4	3,235	119	67.6
P. & S. F.).....1928	57,133	18,054	75,187	5.7	28,571	1,881	671	21.9	507	37.8	3,408	120	64.6
Chicago & Alton.....1929	10,276	4,265	14,541	4.7	22,352	1,432	541	24.3	309	22.3	4,498	129	59.7
1928	9,942	4,171	14,113	4.2	22,664	1,516	612	25.9	401	27.1	5,665	120	66.7
Chi., Burl. & Quincy....1929	44,786	17,979	62,765	4.3	25,548	1,860	853	29.2	621	35.9	4,186	135	61.3
1928	44,571	18,865	63,436	5.0	25,064	1,823	839	27.9	613	35.3	4,174	131	56.4
Chi., Rock I. & Pacific..1929	32,192	17,675	49,867	5.1	19,894	1,421	538	24.7	504	36.6	3,310	161	76.1
1928	29,641	19,105	48,746	5.2	19,456	1,464	575	24.5	546	37.8	3,517	156	72.3
Denver & R. G. Wn.....1929	11,846	5,029	16,875	2.6	19,321	1,637	708	27.8	395	23.7	2,599	181	48.0
1928	10,890	4,936	15,826	2.7	17,471	1,599	740	27.9	405	21.7	2,502	196	45.3
Oregon Short Line.....1929	8,005	5,761	13,766	2.3	25,794	1,824	805	27.2	516	28.6	2,800	120	50.0
1928	7,722	4,743	12,465	3.4	24,220	1,809	807	27.8	647	34.9	3,179	129	56.1
So. Pacific—Pacific Lines.1929	40,066	27,317	67,383	6.2	25,049	1,831	683	23.6	465	32.0	3,491	129	62.5
1928	38,608	27,995	66,603	7.1	23,878	1,815	680	23.4	485	33.7	3,694	133	62.9
Union Pacific 1929	22,270	8,965	31,235	5.1	35,124	1,996	808	22.4	737	46.6	6,115	115	64.9
1928	20,835	10,256	31,091	10.4	34,382	2,120	816	22.6	817	55.9	6,750	122	74.3
Southwestern Region:													
Gulf, Colo. & S. Fe.....1929	11,355	3,846	15,201	4.5	31,400	2,110	892	27.0	460	28.0	3,618	102	65.2
1928	9,712	4,893	14,605	4.0	29,972	2,072	876	26.4	482	29.7	3,639	100	58.3
Mo.-Kans.-Texas Lines...1929	15,902	6,711	22,613	6.2	27,579	1,921	717	23.7	405	30.7	2,885	105	54.6
1928	16,181	7,437	23,618	6.5	26,638	1,963	756	24.2	475	34.9	3,534	104	63.4
Missouri Pacific.....1929	29,276	20,355	49,631	4.5	23,597	1,624	670	26.4	642	40.7	4,294	142	79.9
1928	27,833	21,686	49,519	3.6	23,769	1,718	729	26.4	658	40.6	4,384	135	77.1
St. Louis-San Francisco..1929	25,403	7,814	33,217	3.2	18,384	1,341	518	24.2	412	29.3	2,628	164	62.6
1928	24,293	9,281	33,574	3.3	18,443	1,361	538	25.0	438	30.7	2,822	167	59.1
Texas & New Orleans...1929	12,179	14,593	26,772	3.6	18,360	1,292	485	23.8	428	30.2	2,433	106	72.4
1928	11,891	16,655	28,546	4.8	17,503	1,239	487	23.5	421	28.4	2,553	111	74.4
Texas & Pacific.....1929	6,435	7,511	13,946	4.7	21,072	1,558	551	23.6	592	45.2	4,237	107	68.3
1928	6,630	10,174	16,804	3.6	20,780	1,661	623	25.6	681	48.1	5,680	107	85.7

News of the Week

(Continued from page 489)

$492,841,171, a return of 4.56 per cent. In 1928, they had a net of $464,200,234, or 4.35 per cent. Operating revenues amounted to $2,416,929,408, an increase of 1.9 per cent, while operating expenses totaled $1,702,876,150 an increase of seven-tenths of one per cent. For December, the net railway operating income in the Western district amounted to $25,668,385. The net railway operating income of the same roads in December, 1928, $31,036,860.

CLASS I RAILROADS—UNITED STATES

	Month of December 1929	1928
Total operating revenues	$468,878,962	$496,766,122
Total operating expenses	362,814,311	358,323,820
Taxes	24,399,293	34,982,466
Net railway operating income	72,227,197	94,691,332
Operating ratio—per cent	77.38	72.13
Return on investment—per cent	3.89	5.19
	Twelve Months ended December 31st	
Total operating revenues	$6,352,354,834	$6,189,917,190
Total operating expenses	4,553,968,834	4,482,041,318
Taxes	402,630,307	395,580,049
Net railway operating income	1,274,774,188	1,194,487,805
Operating ratio—per cent	71.69	72.41
Return on investment—per cent	4.95	4.72

C. P. R. to Spend $50,000,000

More than $50,000,000 will be expended on new equipment, new branch line construction and improvement to existing equipment and roadbed by the Canadian Pacific Railway during 1930, according to an announcement made last week by E. W. Beatty, chairman and president.

The details of the company's expenditures for rolling stock and locomotives, to total $14,442,750 are reported elsewhere in this issue. The company will in 1930 spend $3,500,000 on its hotels. The expenditure covers the addition of 160 rooms to the Royal York at Toronto; the erection of a laundry and power house at the Empress Hotel, Victoria; continued improvements to the Royal Alexandra at Winnipeg; a new golf club house at Banff; staff quarters and other buildings at Lake Louise; a new hotel, the Cornwallis, at Kentville, Nova Scotia; another new hotel to be erected at Yarmouth, N. S., later in the year, and a new golf course to be built at Pines Hotel at Digby, N.S.

The company will continue with its program of providing additional facilities in all parts of Canada. In this connection approximately $10,000,000 will be expended in the West on the enlargement of terminals, branch lines and general provision for increased efficiency. This will include the laying of 240 miles with 100 pound rails, the continuing of the rock ballasting between Fort William and Winnipeg; improvement of the existing line between Regina and Lanigan, Sask., and the expenditure on the tunnel at Vancouver, the construction of which was ordered by the Board of Railway Commissioners, to connect the Burrard Inlet terminals with the False Creek yards.

In order to bring transportation facilities to the steadily expanding area of settlement in the Northwest the company will continue with the construction of branch lines. It is proposed during the present year to extend the Soningdale Line to Baljennie; to build a further extension to the branch which will connect Nipawin and Prince Albert; to provide terminal facilities at North Battleford; to complete the branch from Lake Johnston into Archive; complete the line from Arrowwood into Blackie, and, in conjunction with the Canadian National to build the line from Bulwark into Alliance in Alberta. It has also been decided to commence work on a branch line from Prince Albert to Lac Labiche and to complete the grading from Debden to Meadow Lake, a distance of 90 miles.

Providing charter rights are granted by Parliament during the forthcoming session at Ottawa the company proposes to commence work on a branch line to run southwest from Swift Current, a distance of 25 miles; and to build from Rockglen westerly, a distance of 25 miles, in order to serve several townships open to settlement under the British assisted immigration scheme. It is also planned to start work on a branch line to run northwest from Crossfield for a distance of 30 miles and to connect the present line of the Lacombe & Northwestern with the Calgary-Edmonton line at or near Leduc. The grading will be carried on during the present year. In addition the branch lines which were placed under construction in 1929 will be carried to completion, and the building of the important link between Kootenay Landing and Proctor in British Columbia will be actively prosecuted.

Expenditure for new work on the lines in Eastern Canada will be approximately $7,500,000, and will be expended on improvements including the double tracking of the loop line at the Glen Yards, Montreal; extensions to the station platforms and station tracks at Windsor street station, Montreal; extensions to the Palais station and coach yards at Quebec; the completion of the high level coach yard at Toronto; the laying of 160 miles with 100 pound rails and the double tracking of the line between Sudbury, Ont., and Azilda, this latter work to cost approximately $500,000.

* * *

The Southern's "Crescent Limited" near Spartanburg, S. C.

Traffic

Eighty-five farmers from Pennsylvania, Maryland and adjoining states, were taken this week on a ten-day excursion to Florida and Cuba by the Pennsylvania, the tour being sponsored by the "Pennsylvania Farmer" published at Pittsburgh. The party, returning, is scheduled to reach home on the evening of February 28.

For the holiday passenger traffic between New York and Atlantic City, in connection with Washington's birthday, the Pennsylvania operated numerous extra trains. On Friday the twenty-first, the Atlantic City Limited (1:25 p.m.) was operated in six sections. Several other trains had additional sections. Northbound train No. 1074, on Sunday the twenty-third, will be operated in nine sections.

The Southern Railway in its annual review of the textile industry in the southern states, reports that in those states there are now over 19,000,000 spindles in cotton mills, as compared with less than 16,000,000 in all the other states; and in 1929, the mills in the South consumed 5,384,727 bales of cotton, equal to 76.33 per cent of the total consumption in the United States. These mills worked 64,718,482,139 spindle hours in 1929, equal to 68.8 per cent of the total in the country.

The Interstate Commerce Commission has assigned for further hearing at St. Louis on March 20 its proceeding involving the transfer of freight and off-track and constructive station delivery at St. Louis and East St. Louis, for the purpose of receiving evidence as to the cost of the various services to be performed in connection with off-track station receipt and delivery, interchange between railroads and in direct deliveries. This is pursuant to the provision for such a hearing made in the commission's report. The hearing will be before Special Examiner H. C. Ames.

The Interstate Commerce Commission has assigned the complaints of the state of New Jersey and the New Jersey Traffic Advisory Committee against the practice of according free lighterage at New York City, for hearing at Newark, N. J., on April 22, before Chairman McManamy and Examiner Steer. The first hearing will be for evidence of complaints and interveners in support of the complaints. A later hearing will be held at New York for the evidence of defendant railroads and interveners in support of their position.

In an effort to assist agriculture and focus the attention of farmers in the northwest on the use of better seed as a means of improving crops, the Chicago & North Western, with the co-operation of state and national agricultural agencies, will operate a special train, the "Minnesota Seed Special," through southern Minnesota, from February 24 to March 6. The train will include three coaches of

exhibits, a coach for the demonstration of modern seed cleaning and seed treating equipment, and accommodations for the train's personnel. Representatives of the United States Department of Agriculture, the University of Minnesota and other agencies will travel with the seed special to explain the exhibits, demonstrate seed equipment and talk on crop improvement through the selection of better seeds. Thirty Minnesota towns are on the itinerary of the train, which will stop three hours in each city.

New York and Philadelphia Fast Trains

The Pennsylvania announces that on the hourly two-hour express trains between New York and Philadelphia, no baggage service is provided. There are 16 of these trains each way, each weekday, the first one starting at 7 a.m., and the last one at 10 p.m. Ample baggage service is provided on the other express trains between these cities, of which there are 40 or more each way on week days.

New Pere Marquette Train

The Pere Marquette will on March 30 place in service "The Sportsman," a new train operating over the P. M. and the Chesapeake & Ohio between Detroit, Mich., and Newport News, Va. The "salon cars" for coach travel which will be introduced on this train are designed to carry 48 passengers each and are correspondingly roomy. Between Detroit and Columbus, on the southbound trip (leaving Detroit at 6:15 p. m.) dinner will be served in the new club dining cars wherein passengers may dine, smoke or lounge at ease as one would do in a high-class club.

The cars for the new train have been placed on exhibition in cities along the route.

Pennsylvania Transfer Proposal Set for Hearing

The Interstate Commerce Commission has assigned its investigation proceeding under which it recently suspended a tariff filed by the Pennsylvania proposing to allow free transfer of passengers at New York and Newark for hearing at New York on March 26 before Examiner Hansen. The tariff, which was filed to meet the competition of the Baltimore & Ohio motor coach service, did not state the means of conveyance proposed but provides for free transfer to and from points in the two cities for parties of 25 traveling together in a restricted territory generally east of Pittsburgh. The tariff was suspended on protests filed by the New York Central, Pittsburgh & Lake Erie, Erie and Delaware, Lackawanna & Western.

Cab Signals on the Pennsylvania

The installation of the Union continuous cab signal on the Pennsylvania line between New York and Washington, 224 miles, has now been so far completed that all steam trains have this protection except on a few short sections where the installation of the wayside apparatus awaits completion of other improvements. The completion of this improvement will be accomplished within six months and the total cost will be above three million dollars. This includes the cost of equipping 400 locomotives, and also 200 multiple-unit electric cars, which will be in service from Philadelphia, southward to Wilmington, Del., and northward to Trenton, N. J.

Attention is called to the fact that (in connection with automatic train control, ordered by the federal government) the cab signals have been in use on other sections of the Pennsylvania for three years or more; and it is stated that on these sections, the percentage of perfect trips has been 99.6. The company expects on the New York-Washington line to improve materially on this record, "since" it says in a statement, "the absence of the complicated train control apparatus greatly reduces the probability of failure. The Pennsylvania's experience has shown that probability of obtaining a false 'clear' signal through the cab signal system is so remote as to be virtually an impossibility."

Freight Records for 1929

Freight traffic handled in 1929 by the railroads of the United States, measured in net ton-miles, was the greatest for any year on record, according to reports compiled by the Bureau of Railway Economics.

The total was 492,179,745,000 net ton-miles, which exceeded by 0.7 per cent the best previous record, established in 1926. The total for the year 1929 was 3.1 per cent above that for 1928.

In the Eastern district there was an increase of 5.2 per cent compared with 1928 but the Southern district showed a reduction of 0.5 per cent. The Western district reported an increase of 1.8 per cent.

In December, freight moved by the Class I railroads amounted to 36,039.869,000 net ton-miles, a reduction of 4.3 per cent below the same month in 1928. In the Eastern district, the volume of freight in December was a reduction of 2.6 per cent, while the Southern district reported a reduction of 7.9 per cent, and the Western 5.4 per cent.

The daily average movement per freight car in 1929 was 32.4 miles per day. This was an increase of 1.2 miles over the best previous daily average for any year, established in 1928, when the average was 31.2 miles and an increase of 2.1 miles above the daily average for 1927. The average for 1929 was an increase of 10 miles above that for 1921.

The highest daily average for any one month on record was established in October, 1929, 36.3 miles.

The average speed per freight train in 1929 was also the highest ever attained, being 13.2 miles an hour, 0.3 mile above the best previous record, established in 1928.

The average load per car in 1929 was 26.9 tons, including l.c.l. freight as well as carload. This was an increase of 0.2 ton above that for 1928 but 0.3 ton below that for 1927.

Foreign

Great Western Announces More Improvements

The directors of the Great Western Railway of Great Britain have approved an expenditure of £200,000 (approximately $1,000,000) on new construction in connection with British government plans for the relief for unemployment, as follows: A new freight station at St. Austell; extension of warehouse accommodations at Hockley; a new warehouse at Swansea; a similar building at Small Heath, and the substitution of color light signals for existing semaphore signals between Paddington, London, and Southall. These projects are in addition to others previously authorized calling for a total expenditure of about £5,000,000, all of which have been begun with the exception of improvements to the passenger stations at Cardiff and Bristol and a short relocation of main line.

German Railway Developments

The German National Railway Company (Deutsches Reichsbahn) has converted 100 old sleeping cars into traveling school rooms for the training of personnel. The cars, as converted, contain 36 seats for pupils, a room for the instructor and room for the necessary teaching material. Most of the cars so equipped are fitted with such material for all branches of railroad operation, but some are devoted to special branches.

The German company has also installed 1,650 ticket printing machines in its more important stations. These machines can be adjusted by passengers to print any ticket required, including the price.

Department of Commerce reports also state that, as a result of agreements reached between international freight representatives, through bills of lading may now be used on shipments between Germany, Greece and Turkey.

Commonwealth Railways of Australia in 1928-29

A deficit equivalent to $1,713,500 after interest charges was reported by the Commonwealth Railways of Australia for the year ending June 30, 1929, according to the annual report recently issued from Melbourne. The foregoing figure compares respectively with deficits after interest charges of $1,034,700 in 1927-28, $1,419,600 in 1926-27 and $2,032,500 in 1925-26.

Composite gross revenues in 1928-29 amounted to $2,772,100, operating expenses $2,745,700 and net revenue $26,400. This latter compares with a net revenue from operations of $303,900 in 1927-28. Gross revenues for 1927-28 were $2,921,-300, and operating expenses $2,617,000. It will thus be seen that gross revenues during the year under review fell $149,200 below those of the previous year, while operating expenses rose $128,300, the result being the $277,500 decrease in 1928-29 net revenues from operations as against the comparable 1927-28 figure.

Each of the four units comprising the Commonwealth Railways (the Trans-Australian, the Central Australia, the North Australia and the Federal Territory) reported losses in gross revenue as compared with the previous year, but only the North Australia, operating 264 miles of line, and the Federal Territory, a five-mile line, reported accompanying decrease in operating expenses. The North Australia's loss in gross revenues amounted to $111,500, its decrease in expenses was $54,200; the Federal Territory line's 1928-29 revenue was $10,800 less than that of 1927-28, its expenses were $4,400 lower.

Whereas in 1927-28 the Federal Territory line was the only one to report a loss from operations, in the past year the only one of the group to report a net revenue was the Trans-Australia, a 1,051 mile line and the largest of the group. The 1928-29 net revenue from operations of this latter line was $155,500 as compared with a 1927-28 figure of $222,400.

In the 1927-28 annual report, financial statistics of these Commonwealth Railways were tabulated back to 1910-11 when operations embraced 624 miles of line as compared with the 1928-29 total of 1,969 miles. For no fiscal period recorded in this tabulation of the past 19 years' results has there been reported a surplus after interest charges, and not until the year 1926-27 was there a net revenue from operations. The operating ratio in 1910-11 was 113.77 and it rose from this point with fluctuations up and down to a 1916-17 peak of 160.19. From this latter point it fell in post-war years until it reached 94.53 in 1926-27, the first time it was below 100. A farther fall to 89.59 in 1927-28 was followed by a rise to 99.05 for the past year.

The report attributes the 1928-29 revenue loss to the decrease in live-stock and wool traffic, owing to drought conditions in territories served by the Trans-Australian and Central Australia. Losses on other lines were attributed to a curtailment in building operations and the handling of materials therefor. The increased expenses on the Trans-Australian was attributed to heavy repairs to locomotives due to bad water conditions, repairs to other rolling stock, and increased expenses on account of running extra trains to care for increases in the number of passengers. Higher costs on the Central Australia were due to extensive overhauling of locomotives because of their condition after hauling heavy construction trains for several months, the running of additional train mileage, hauling construction materials, extra relaying of track, and maintenance of additional track on account of the opening of the Oodnadatta-Rumbalara line (170 miles) in December 1928.

In addition to this latter Central Australia extension, the mileage of the North Australia was also increased by 66 during the year. These two extensions brought the total mileage of the Commonwealth lines to 1,969 on June 30, 1929 as against a total of 1,733 miles on June 30, 1928. Capital investment, excluding rolling stock, rose from $52,844,400 in 1927-28 to $60,963,600 in 1928-29.

Equipment and Supplies

Locomotives

THE MAINE CENTRAL is inquiring for one or two 4-6-4 type locomotives.

THE TORONTO, HAMILTON & BUFFALO is inquiring for two eight-wheel switching locomotives.

THE UNION PACIFIC is inquiring for 25 three-cylinder locomotives of the 4-12-2 type and 20 extra locomotive tenders of 18,000-gallon capacity.

Freight Cars

THE NORTH AMERICAN CAR CORPORATION is inquiring for 50 tank cars.

THE MISSOURI-KANSAS-TEXAS is inquiring for 100 general service hopper cars of 70 tons' capacity.

THE FLEISCHMANN TRANSPORTATION COMPANY has ordered one compartment tank car of 8,000 gal. capacity from the General American Tank Car Corporation.

THE OLD HICKORY CHEMICAL COMPANY has ordered one insulated tank car of 10,000 gal. capacity from the General American Tank Car Corporation.

THE MISSOURI PACIFIC has ordered 20 drovers caboose cars from the St. Louis Car Company. Inquiry for this equipment was reported in the *Railway Age* of February 1.

THE YOUNGSTOWN SHEET & TUBE COMPANY is inquiring for 12 flat cars of 75 tons' capacity. This company is also inquiring for 80 gondola car bodies as reported in the *Railway Age* of February 15.

THE CANADIAN PACIFIC has placed orders for 250 coal cars with the Canadian Car & Foundry Company and 250 freight refrigerator cars with the National Steel Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of February 15.

Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 11 steel underframes for passenger train cars.

THE PULLMAN COMPANY has ordered 100 general service passenger cars from the Pullman Car & Manufacturing Corporation.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for five baggage cars and will probably ask for bids on five horse-baggage cars later.

THE SOUTHERN PACIFIC has ordered 10 baggage cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 4.

THE LOUISVILLE & NASHVILLE is inquiring for 23 passenger cars as follows:

4 passenger and baggage cars 70 ft. long
4 vestibule coaches
2 baggage and mail cars 70 ft. long
10 baggage cars 70 ft. long
3 dining cars

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered four parlor cars and 10 coaches from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of December 14.

THE READING is inquiring for multiple-unit cars as follows: 61 passenger motor cars, two passenger, baggage and mail cars, seven passenger and baggage cars, also for 25 car bodies. The 25 bodies are for service on the Central of New Jersey. Inquiry for the electrical equipment for these cars was reported in the *Railway Age* of February 15.

THE RIO GRANDE DO SUL is inquiring for five sleeping cars, four dining cars, six first-class coaches and six mail and baggage cars. Dr. Octacilio Pereira, Porto Alegre, Rio Grande do Sul, Brazil, is general manager.

THE CANADIAN PACIFIC has placed orders for the following equipment:

No.	Type	Builder
10	Baggage cars	National S. C. Corp.
7	Smoking coach frames	National S. C. Corp.
13	First-class coach frames	National S. C. Corp.
8	Dining car frames	National S. C. Corp.
3	Mail and express cars	Canadian C. & Fdy.
50	Sleeping car frames	Canadian C. & Fdy.
5	Compartment car frames	Canadian C. & Fdy.
14	Parlor car frames	Canadian C. & Fdy.
2	Single room overnight sleeping car frames	Canadian C. & Fdy.

Inquiry for this equipment was reported in the *Railway Age* of February 15.

Machinery and Tools

THE CHICAGO & NORTH WESTERN is inquiring for an 800-ton wheel press.

THE TEXAS & PACIFIC has ordered one Putnam Machine Works improved journal turning, quartering and crank pin turning lathe, equipped with 4½ in. diameter quartering and pin turning bars, from Manning, Maxwell & Moore, Inc., for use in its Ft. Worth, Texas, shop.

Iron and Steel

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 7,000 tons of structural steel for grade separation work in Chicago.

THE BOSTON & MAINE has ordered 1,200 tons of steel for a bridge at Claremont, N. H., from the American Bridge Company and an order for 400 tons for three bridges, has been given to the Bethlehem Steel Company.

Signaling

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company, material for a mechanical interlocking, 12 levers, for Morrison, Va.

Supply Trade

Douglas Cameron, at one time division engineer of the Chicago, Burlington & Quincy, has been appointed representative of the **Electric Tamper & Equipment Company,** Chicago.

The Sivyer Steel Casting Company, Milwaukee, Wis., and the **Nugent Steel Castings Company,** Chicago, have been consolidated under the name of the **Sivyer Steel Casting Company.**

Oliver H. Melum and **Andrew Speirs** have been appointed assistant vice-presidents of the **American Car & Foundry Company,** Chicago. Both were formerly sales agents with headquarters at Chicago.

Richard B. Carr, manager of the Pacific Coast sales of the rail, plate, bar and shape department of the **United States Steel Products Company,** with headquarters at San Francisco, Cal., has retired.

The American Rolling Mill Company has moved its Philadelphia, Pa., office from 1213 Franklin Trust building to 2020 Lewis Tower. **W. S. Stephenson** is district sales manager and **E. C. Bray** is in charge of all sales to railroad companies.

Lewis O. Cameron who represents the **Edgewater Steel Company,** the **General American Car Company** and the **Baker Industrial Truck Company** has moved his office from the Munsey building to the Rust Building, at the corner of Fifteenth and K streets, N. W., Washington, D. C.

W. C. Minier, formerly connected with the Shepherd Crane & Hoist Company and **F. C. Lorenz** for many years connected with the Cleveland Electric Tramrail Company have joined the Cleveland, Ohio, sales and engineering staff of the **Reading Chain & Block Corporation,** Reading, Pa.

William B. Lawson has resigned as director of sales of The International Nickel Company of Canada, Ltd., and from the boards of various owned and associated companies in the United States and Europe to join the **Harshaw Chemical Company,** Cleveland, Ohio, as a director and vice-president.

The Chicago Bridge & Iron Works, Chicago, has acquired through purchase, the Birmingham, Ala., plant of the **Reeves Brothers Company.** This plant, which has a capacity of 4,000 tons of plate steel per month, will be operated in conjunction with the three existing plants of the Chicago Bridge & Iron Works.

Hamilton A. Gray has been appointed traffic manager of the **Eagle-Picher Lead Company,** Chicago. Mr. Gray entered the service of the Eagle-Picher Lead Company in November, 1918, having previously served on the Chicago & Eastern Illinois for 13 years. He succeeds **John A. Middleton** who retired from active service as traffic manager but will continue as consultant traffic manager in a supervisory capacity. Mr. Middleton joined the Eagle-Picher organization as traffic manager in October 1918. He was formerly freight traffic manager of the St. Louis-San Francisco and from December, 1917, until the close of the war, manager of inland traffic of the Oil Division of the Fuel Administration.

J. S. Lemley, who has been elected vice-president of the **T-Z Railway Equipment Company,** Chicago, entered railway service in July, 1893, as a fireman on the Wheeling division of the Baltimore & Ohio, in which capacity he served until November, 1908, when he resigned to become an engineer with the Chicago, Milwaukee, St. Paul & Pacific on the Puget Sound extension. In 1911 he resigned to enter the employ of the Baltimore & Ohio South Western as traveling engineer and in 1912 he was promoted to supervisor of locomotive operation of this road and the Cincinnati, Hamilton & Dayton, with headquarters at Cincinnati. He resigned from this position in 1914 to accept a position with the Texas & Pacific in the mechanical department. In 1915 he left the Texas & Pacific to become associated with the G. F. Cotter Supply Company of Houston, Tex., remaining with that company until January 1, 1921, at which time he became associated with the Chas. R. Long, Jr. Company, Louisville, Ky., and the Okadee Company and Viloco Railway Equipment Company, Chicago. After holding various positions with these companies, he was elected vice-president, which position he was holding at the time of his resignation, preceding his recent election to the position of vice-president of the company, as noted above.

J. S. Lemley

Obituary

Edward C. Fisher, district sales manager of the American Locomotive Company with headquarters at St. Louis, Mo., died on February 17 at Rochester, Minn., following an illness of several months' duration.

Harry Ainsworth, president of Williams, White & Co., who died on February 6 at Moline, Ill., was born in Geneseo on May 9, 1862, and graduated from Oberlin College at Oberlin, Ohio, in 1884, after which he graduated from Harvard Law School in 1887. After graduating he immediately became associated with his father in the management of Williams, White & Co., and after holding various positions with the company he was made vice-president and general manager. He held this position until 1914 when, upon the death of his father, he became president and general manager, the position he was holding at the time of his death.

Harry Ainsworth

Trade Publication

DOOR-WAYS.—The February number of this publication which is issued by Richards-Wilcox Manufacturing Company, Aurora, Ill., features the fiftieth anniversary of the company which was established in 1880. The progress of its activities is traced from the original "parlor door hangers," its first product, to the present offering of 50 distinct types of door hardware. The history of the parent company is given, together with a short sketch of the three presidents who have administered the affairs of these companies and of the present organization. The remainder of the book, which contains 24 pages and is well illustrated, is devoted to the sales organization and the retailers who handle R-W products.

Construction

CANADIAN PACIFIC. — This company plans the construction of five steel bridges on its line between Vancouver, B. C., and Northbend during 1930 to replace existing structures and allow the operation of heavier locomotives over the line.

CHICAGO, ROCK ISLAND & PACIFIC.—This company and the C. R. I. & Gulf have jointly applied to the Interstate Commerce Commission for authority to build a line from Forrest, N. M., to Vega, Tex., a total of 76 miles. The Rock Island proposes to build from Forrest to a point in the southwest corner of Deaf Smith county, Tex., and the Gulf from that point to Vega.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—A contract for the construction of a water-softening plant at Harrisburg, Ill., has been let to the Pittsburgh-Des-Moines Steel Company, Pittsburgh, Pa.

ERIE.—The Public Service Commission of New York has approved the extension of the subway under this company's tracks at Steuben street, Hornell, N. Y., to permit the construction of an additional or fourth railroad track.

GULF, COLORADO & SANTA FE.—A contract has been let to Robert E. McKee, El Paso, Tex., for the construction of a two-story brick storehouse, two one-story brick and reinforced concrete warehouses and a concrete platform at Cleburne, Tex.

PENNSYLVANIA.—In connection with this company's electrification program on its New York division, work has been started by company forces on lowering the tracks through the Hudson and East River tunnels at New York City to a depth sufficient to provide clearance for the use of catenary systems through these tunnels. The lowering of the tracks is being carried out at night to avoid interference with traffic.

PITTSBURGH & WEST VIRGINIA.—The Interstate Commerce Commission has authorized this company to construct a branch line extending from a point on the Connellsville extension near Pigeon Creek, Pa., to a connection with the Donora Southern, approximately 6 miles; estimated cost, $1,397,030.

SOUTHERN PACIFIC.—This company and the Inter-California have applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Sandia to Holtville, Cal., 5.7 miles, and the Southern Pacific has applied for authority to operate under trackage rights over the line of the Holton Inter-Urban from El Centro to Holtville, Cal., connecting with the proposed extension. It has also asked authority to build a spur track of 19,500 feet from Stockton, Cal., to a point in San Joaquin county.

TEXAS & PACIFIC (Texas-New Mexico).—A contract for the grading of the last 25 miles of the extension from Monahans, Tex., to Lovington, N. M., between Hobbs, N. M., and Lovington has been awarded to White Brothers, Iraan, Tex.

WESTERN PACIFIC.—This company and its subsidiaries, the Sacramento Northern and the Tidewater Southern, will expend $4,548,000 during 1930 for the upkeep and improvement of their properties and for additional facilities and equipment in California, Nevada and Utah, as a part of the $18,000,000 improvement program adopted in 1927, and aside from expenditures for maintenance and extensions of lines. The principal items in the Western Pacific budget of $3,621,000 are improvements in main line roadway and track, $1,960,000; passing, interchange and side tracks and facilities, $271,000; bridges and trestles, $229,000; concrete lining of tunnels, $48,000; station facilities, $118,000; yard facilities, $122,000; miscellaneous structures, $171,000; improved housing for employees, $97,000. Bank widening will be undertaken on 15 miles of line between Oroville, Cal., and Las Plumas and on 137 miles of line between Reno Junction, Cal., and Winnemucca, Nev., at a cost of $307,000, and on 93 miles of line between Wells, Nev., and Wendover, Utah, at a cost of $81,000. On the Sacramento Northern the budget of $829,000 includes $512,000 for track improvements and additional track facilities, $64,000 for bridges and trestles and $132,000 for stations and other buildings. Bank widening, preliminary to ballasting and rail relaying, will be undertaken between Burton, Cal., and Bay Point, 18 miles. Two additional passing tracks will be constructed between these points, involving a total expenditure of $265,000 in this 18-mile section. Between Chipps, Cal., and Sacramento, 46 miles, banks will be widened and two passing tracks will be constructed, at a cost of $155,000. It is expected that track and bridge improvements will be started by March 1 for completion prior to the heavy fall movement of traffic.

* * *

A Chicago Great Western Freight Train at Bellewood, Ill.

Financial

CANADIAN PACIFIC.—*New Director.*—Robert C. Stanley, president of the International Nickel Company of Canada, has been elected a director of this company to fill the vacancy created by the death of F. W. Molson.

CENTRAL OF NEW JERSEY.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $480,000 of 4½ per cent equipment trust certificates, to be sold at not less than 99.192 and accrued dividends.

CHICAGO & NORTH WESTERN.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $1,425,000 of 4½ per cent equipment trust certificates.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon the operation of a branch line extending from Disque, Wash., westerly to Twin Rivers, 10 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC. — *Acquisition.* — The Interstate Commerce Commission has authorized this company to acquire and operate the lines of the Chicago, Milwaukee & Gary and to assume obligation and liability in respect of $3,000,000 of the latter company's first mortgage 5 per cent gold bonds.

Abandonment.—This company and the Chicago, Milwaukee & Gary have been authorized to abandon a line extending from Kirkland, Ill., westerly to Camp Grant, 15.2 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $2,115,000 of its 4½ per cent equipment trust certificates, series K, dated November 1, 1929, and maturing in installments from 1930 to 1944. The issue is authorized for sale to the highest bidder, Halsey, Stuart & Company, Inc., at 97.66, making the average annual cost to the railroad approximately 4.87 per cent.

DELAWARE, LACKAWANNA & WESTERN. —*Bond Issue Authorized.*—The Interstate Commerce Commission has authorized this company to guarantee an issue by the Morris & Essex of $10,000,000 of the latter company's series A, 5 per cent, construction mortgage bonds to be sold to J. P. Morgan & Co., at 101¼, making the cost to the company 4.914 per cent. An issue of $15,000,000 of series B, 4½ per cent bonds has been authorized for sale to the same banker at 94¼, making the cost to the company 4.895 per cent. Both issues mature in 1955.

ERIE. — *Acquisition.* — The Interstate Commerce Commission has authorized this company to acquire and operate the

Conesus Lake Railroad, the Erie & Black Rock, and the Middletown & Crawford. These lines are controlled by the Erie through stock ownership and have been operated as integral parts of its system for many years.

FLORIDA CENTRAL.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Inglis to Rockwell, Fla., 29.54 miles, as well as the use of 4.3 miles of the line of the Seaboard Air Line.

JAMESTOWN, WESTFIELD & NEW YORK.—*Joint Control Urged.*—The Manufacturers Association of Jamestown, N. Y., has filed with the Interstate Commerce Commission a petition for a modification of its consolidation plan so as to allocate this line, a 34-mile electric railway serving Jamestown, jointly to the New York Central, the New York, Chicago & St. Louis and the Pennsylvania.

LOUISIANA & ARKANSAS.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $4,000,000 of first mortgage 5 per cent bonds, in exchange for a like amount of second mortgage 5½ per cent bonds, and to reclassify 100,000 shares of 6 per cent preferred stock into 60,000 shares of 6 per cent cumulative preferred stock and 40,000 shares of 6 per cent preferred.

MISSOURI PACIFIC.—*Unification Proceedings.*—The Interstate Commerce Commission has assigned this company's application for authority to acquire control by lease of its subsidiary companies except the Texas & Pacific has been assigned for oral argument on February 28, before the full commission instead of Division 4. The commission has denied the petition of the Waco, Beaumont, Trinity & Sabine to re-open the record for the purpose of admitting evidence in support of its efforts to be included in the Missioui Pacific system. The line was included in the consolidation plan in the Southern Pacific system, but after receiving a letter from the Southern Pacific indicating that it had no desire to acquire the property the Waco asked to have the Missouri Pacific proceeding re-opened.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of a portion of its Swan Creek branch, from Rochelle to Bond, Tenn., 8.36 miles.

NEW YORK CENTRAL.—*Increase in Authorized Capital Stock.*—The stockholders of this company have voted to permit an increase in the authorized capital stock of this company from $500,000,000 to $700,000,000.

NEW YORK CENTRAL.—*Acquisition of Ulster & Delaware.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the Ulster & Delaware, one of the short lines which intervened in the proceedings on the New York Central unification plan and for which the commission required that it make an offer to purchase at its commercial value. The application states that its offer of $1,500,000 for this property was rejected and that the question of the commercial value was submitted to arbitration. Two of the arbitrators found the "commercial value to the New York Central" to be $4,100,000, while the third found the "commercial value" to be $1,813,333. The New York Central offers to pay that price, as representing "the only award made in compliance with the direction of the commission," or such price as may be approved by the commission.

NORTHWESTERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has affirmed the prior decision authorizing this company to abandon a line from a point extending from Point Reyes, Cal., to Monte Rio, 36.5 miles. The case was reopened on the petition of local interests who wished to have this narrow-gage line continue in operation.

PENNSYLVANIA.—*Bonds of Pennsylvania, Ohio & Detroit.*—The Pennsylvania, Ohio & Detroit, lessor to the Pennsylvania, has been granted authority by the Interstate Commerce Commission to issue $5,067,000 of first and refunding mortgage bonds to be delivered to the Pennsylvania in reimbursement to the latter for advances made in accordance with the terms of the lease.

PEORIA & EASTERN.—*New Directors.*—T. W. Evans, vice-president of the Indiana Harbor Belt, S. C. Murray, general counsel of the New York Central, and W. T. Stevenson, assistant vice-president of the New York Central, all with headquarters at Chicago, have been elected directors of this company.

PUEBLO UNION DEPOT & RAILROAD COMPANY.—*New Officers and Director.*—A. C. Shields, vice-president and general manager of the Denver & Rio Grande Western, has been elected a director of this company, succeeding J. S. Pyeatt. W. F. Kirk, general superintendent of the Missouri Pacific at Kansas City, Mo., has been elected president; H. B. Lautz, assistant general manager of the Atchison, Topeka & Santa Fe at La Junta, Colo., has been elected vice-president, and A. R. Thomas, formerly an accountant for the company, has been elected auditor.

SEABOARD AIR LINE.—*Abandonment.*—This company and the Kissimmee River Railway have been authorized to abandon a 15-mile branch line to Nalaca, Fla.

SUMPTER VALLEY.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Bates to Prairie City, Ore., 20 miles.

UNION PACIFIC.—*New Director.*—David F. Houston, president of the Mutual Life Insurance Company, has been elected a director of the Union Pacific Railroad.

Dividends Declared

Canadian Pacific.—Common, $2.50, quarterly; Preference, $2.00, semi-annually, both payable April 1 to holders of record February 28.

Chesapeake & Ohio.—Common, $2.50, quarterly, payable April 1 to holders of record March 8; Preferred, $3.25, semi-annually, payable July 1 to holders of record June 7.

Chicago & North Western.—Common, 1¼ per cent, quarterly; Preferred, 1¾ per cent, quarterly, both payable March 31 to holders of record March 4.

Gulf, Mobile & Northern.—Preferred, $1.50, quarterly, payable April 1 to holders of record March 15

Hocking Valley.—Common, $2.50, quarterly, payable March 31 to holders of record March 8.

New York, New Haven & Hartford.—Common, $1.50, quarterly; Preferred, $1.75, quarterly, both payable April 1 to holders of record March 7.

North Pennsylvania.—$1.00, quarterly, payable February 25 to holders of record February 17.

Pere Marquette.—Common, $1.50, quarterly; Preferred, $1.25, quarterly; Prior Preferred, $1.25, quarterly; Common, Extra, $2.00; Common dividends are payable April 1 to holders of record March 8 and preferred dividends are payable May 1 to holders of record April 15.

Southern Pacific.—Common, 1½ per cent, quarterly, payable April 1 to holders of record February 24.

Union Pacific.—Common, 2½ per cent, quarterly; Preferred, 2 per cent, both payable April 1 to holders of record March 1.

Average Prices of Stocks and of Bonds

	Feb. 18	Last week	Last year
Average price of 20 representative railway stocks	136.32	135.88	131.48
Average price of 20 representative railway bonds	92.44	92.50	91.37

* * *

A Delaware, Lackawanna & Western 4-8-4 Freight Locomotive

Railway Officers

Executive

Charles E. Green, who has been promoted to assistant to the vice-president, operating, of the Chicago, Rock Island & Pacific in charge of labor matters, with headquarters at Chicago, was born in Wisconsin in 1867, and attended public school at Garner, Iowa. He entered railway service in 1884 as a student telegrapher on the Chicago, Milwaukee & St. Paul. Five years later he became an operator and dispatcher on the Burlington, Cedar Rapids & Northern (now part of the Rock Island), then being advanced successively to dispatcher at

Charles E. Green

Estherville, Iowa, and chief dispatcher at Cedar Rapids, Iowa. Soon after the B., C. R. & N. was absorbed by the Rock Island, he was appointed trainmaster in 1904. During 1912 and 1913, Mr. Green served as train rules examiner and then acted as trainmaster on the Iowa and Illinois divisions of the Rock Island. In 1918 he was promoted to superintendent of the Dakota division, where he remained until 1924, when he was transferred to the Iowa division. During 1924 he also served for a short time as assistant to the general manager of the First district at Des Moines, Iowa. Mr. Green was then appointed superintendent of the Missouri division, with headquarters at Trenton, Mo., his promotion to assistant to the vice-president in charge of operation becoming effective on February 15.

Financial, Legal and Accounting

B. H. Curley has been appointed auditor of the Chattahoochee Valley, with headquarters at West Point, Ga., succeeding **A. H. Holder,** resigned.

George L. Buland, a member of the law firm of Dey, Hampson & Nelson, at Portland, Ore., has been appointed assistant counsel for the Southern Pacific, with headquarters at New York.

H. McDonald, freight claim agent of the Central region of the Canadian National at Toronto, Ont., has been appointed chief freight claim agent of the Western region, with headquarters at Winnipeg, Man. **T. Ginnelly** and **J. W. Connell,** assistant freight claim agent at Vancouver, B. C., and Winnipeg, respectively, have been promoted to freight claim agents at Vancouver and Toronto, respectively. **C. F. Joyce,** chief clerk to the assistant freight claim agent at Winnipeg, has been promoted to assistant freight claim agent at that point, succeeding Mr. Connell.

Operating

P. Nichols has been appointed superintendent of the Port Tampa terminals of the Atlantic Coast Line, with headquarters at Port Tampa, Fla.

The headquarters of **S. V. Rowland,** superintendent of the Eastern division of the Chicago Great Western, have been removed from Chicago to Oelwein, Iowa.

R. E. Steere, assistant to the superintendent of telegraph of the Southern Pacific, has been promoted to assistant superintendent of telegraph, with headquarters as before at San Francisco, Cal.

George Van Brimer, general superintendent of the Colorado & Wyoming, with headquarters at Pueblo, Colo., retired from active service on January 31, and the position of general superintendent has been abolished. He served from 1906 to 1919 as superintendent of the Middle and the Northern divisions and was promoted to general superintendent in the latter year.

M. F. Lewis, assistant passenger trainmaster on the Pittsburgh division of the Pennsylvania, has been promoted to trainmaster of the Grand Rapids division at Grand Rapids, Mich. Mr. Lewis succeeds **R. E. Casey,** who has been appointed special agent, representing the general manager of the Western region at Grand Rapids. Mr. Casey's work will involve the furtherance of public relations activities.

E. McCracken, assistant superintendent on the Alberta district of the Canadian Pacific at Calgary, Alta., has been transferred to the Lethbridge division at Macleod, Alta., succeeding **J. A. Panter,** who has been transferred to the Medicine Hat division at Medicine Hat, Alta. Mr. Panter succeeds **W. J. McLean,** who has been transferred to the Calgary and Revelstoke divisions of the British Columbia district at Field, B. C., where he replaces **W. H. Gordon,** deceased. **Frederick C. Sharpe,** conductor at Medicine Hat, has been promoted to assistant superintendent at Calgary, succeeding Mr. McCracken.

Urban W. Edmonds, who has been promoted to superintendent of the Peoria division of the New York, Chicago & St. Louis, with headquarters at LaFayette, Ind., was born in that city on January 6, 1883. After attending high school he entered railway service on May 2, 1900, as a night operator on the Lake Erie & Western (now part of the Nickel Plate) at Tipton, Ind. Mr. Edmonds learned telegraphy while carrying messages for the Western Union at Tipton and while working as an extra operator with that company early in 1900. Two years later he was transferred to Peru, Ind., on the L. E. & W., and was then advanced to dispatcher at LaFayette. In 1906 he was transferred to Lima, Ohio, being promoted to chief train dispatcher at Lima in 1916, and to trainmaster on the Indianapolis division at Peru in 1918. Mr. Edmonds was transferred to the Peoria division

U. W. Edmonds

at LaFayette in 1919, his promotion to superintendent of the Peoria division becoming effective on February 1.

James I. MacKay, who has been promoted to superintendent of the Nelson division of the Canadian Pacific, with headquarters at Nelson, B. C., has been connected with the operating department of that road for 25 years. He was born on May 28, 1891, at Pictou, N. S., and attended public schools at Nelson, entering railway service at the age of 13 years as a messenger on the Canadian Pacific at Vancouver, B. C. Since 1906 Mr. McKay has served as a clerk and telegraph operator at Vancouver, ticket clerk at New Westminster, B. C., chief clerk of car service at Vancouver, assistant chief clerk and chief clerk to the general superintendent at Vancouver, transportation assistant at Moose Jaw, Sask., and acting assistant superintendent at North Bend. On May 15, 1928, he was appointed assistant to the general superintendent of the British Columbia district at Vancouver.

his promotion to superintendent at Nelson becoming effective on January 1.

C. K. Brodhead, assistant superintendent of the Electric division and superintendent of the Grand Central terminal of the New York Central, has been appointed superintendent of the Ontario division, with headquarters at Oswego, N. Y. Mr. Brodhead was born on July 19, 1873, at East Mauch Chunk, Pa., and was educated in the public schools at Perth Amboy, N. J., and the Pingry school of Elizabeth, N. J. He entered railroad service in 1893 with the Lehigh Valley as a telegraph operator and train dispatcher at Perth Amboy. In 1900 he became train dispatcher at Easton, Pa., and in 1907 he was appointed assistant train master at Packerton, Pa. In 1909 he severed his connection with the Lehigh Valley and entered the service of the New York Central, with which he has been continuously since that time, starting as a yardmaster at High Bridge, N. Y., and then at Croton-on-Hudson, N. Y. In September, 1910, he was appointed train master of the Electric division, with headquarters at New York, and in November, 1924, he was promoted to the position of assistant superintendent of the Electric division and superintendent of the Grand Central terminal, the positions he held until his recent appointment.

John D. Farrington, who has been promoted to general superintendent of the Missouri lines of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., has long been connected with that company. He was born at St. Paul, Minn., on January 27, 1891, and after attending high school in that city entered railway service on June 23, 1909, in the engineering department of the Great Northern. In the summer of the following year he became a timekeeper in the track department of the Burlington, then advancing through the positions of assistant foreman, foreman, roadmaster and assistant trainmaster. In 1912, Mr. Farrington was promoted to trainmaster on the Ottumwa division. During 1917 he served as a lieutenant and a major in the United States Army, then returning to the Burlington as assistant superintendent of the Ottumwa division. Later during federal control of the railroads he served on the staff of the federal manager of the Burlington at Chicago, where he remained until March 1, 1920, when he was appointed superintendent of the Quincy, Omaha & Kansas City. On November 1, 1922, Mr. Farrington was appointed superintendent of the St. Joseph division of the Burlington, being transferred to the Aurora division at Aurora, Ill., on August 3, 1923. His promotion to general superintendent of the Missouri lines became effective on January 1.

Michael J. Welsh, who has been promoted to superintendent of the St. Cloud division of the Great Northern, with headquarters at Minneapolis, Minn., has been connected with that road during his entire railway career. He was born at Caledonia, Minn., on March 17, 1884, and after attending high school spent two years at Toland's Business University, La Crosse, Wis. His first railroad experience was obtained as a clerk on the Great Northern at Havre, Mont., on April 11, 1904. For the following 12 years he served at Spokane,

Michael J. Welsh

Wash., Whitefish, Mont., Everett, Wash., and Seattle in various office positions from clerk to chief clerk in the offices of the superintendent and general superintendent. On May 1, 1916, Mr. Welsh was promoted to trainmaster at Spokane, later being transferred to Marcus, Wash., Havre, Everett and Seattle, then being appointed superintendent of the Minneapolis passenger station on December 31, 1927. On Agust 1, 1929, he was advanced to assistant division superintendent at Minneapolis, his promotion to superintendent of the St. Cloud division becoming effective on February 1.

John S. Goodman, division engineer of the Reading, Reading division with headquarters at Reading, Pa., has been appointed superintendent of the Atlantic City Railroad (a subsidiary of the

John S. Goodman

Reading), with headquarters at Camden, N. J. Mr. Goodman was born on March 17, 1884, at Philadelphia, Pa., He was graduated from Bucknell University in 1903, and from the University of Pennsylvania in 1906. On July 13, 1906, Mr. Goodman commenced his railway career with the Reading as assistant supervisor of the New York division. In November, 1907, he was transferred to a similar position at Lansdale, Pa., and in April, 1909, he was appointed supervisor at Boiling Springs, Pa. On December 12, 1910, he became supervisor of the New York division, with headquarters at Olney, Pa. On January 1, 1912, he was appointed division engineer and has served in this capacity on the Harrisburg, Shamokin, and Reading divisions until his recent appointment as superintendent of the Atlantic City Railroad, on February 1.

Traffic

C. E. Gass has been appointed general agent for the Chicago, Springfield & St. Louis at New York, succeeding **Earle J. Staehle,** commercial agent, who resigned on February 1.

B. R. Brenan, assistant general freight agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been promoted to general freight agent in charge of solicitation and service, with headquarters at Cincinnati, Ohio.

W. M. Powers, traffic manager of the Alton & Eastern and the Litchfield & Madison, has been appointed assistant freight traffic manager of the Illnois Terminal, in charge of rates, tariffs and divisions, with headquarters as before at St. Louis, Mo.

Charles W. Brosius, who for the past three months has served as general manager of the Board of Port Commissioners, New Orleans, La., has been appointed to his former position of general freight agent of the Texas & Pacific at New Orleans.

William O. Lewis, who has been promoted to assistant freight traffic manager of the Gulf, Mobile & Northern and the New Orleans Great Northern, with headquarters at New Orleans, La., has been engaged in railway traffic work for nearly 30 years. He was born at Madison, Ind., on August 15, 1882, and entered railroad service in 1900 on the Baltimore & Ohio Southwestern (now part of the Baltimore & Ohio). For nine years he was connected with this company in the general freight office and that of the division freight agent at Cincinnati, Ohio, then becoming chief clerk to the general agent of the St. Louis-San Francisco at the same point. Later he was advanced to traveling freight agent at Memphis, Tenn., and was then appointed commercial agent for the Frisco and the Chicago & Eastern Illinois at Jacksonville, Fla. During the world war, Mr. Lewis served as first lieutenant, Quartermasters Corps, at Schuylkill arsenal, Philadelphia, Pa., in charge of overseas freight. Upon being mustered out of service he was connected for a short time with the Frisco at St. Louis, Mo. In 1920 he was appointed district freight agent of the Gulf, Mobile & Northern

at St. Louis, being promoted to assistant freight traffic manager when that road was consolidated with the New Orleans Great Northern on January 1.

Engineering, Maintenance of Way and Signaling

N. E. Potter, assistant engineer on the Wabash at Decatur, Ill., has been promoted to division engineer of the Chicago Terminal division, with headquarters at Chicago.

P. D. Fitzpatrick, chief engineer of the Central Vermont, with headquarters at St. Albans, Vt., has been appointed assistant chief engineer of the Canadian National, in charge of construction of the Montreal terminal.

Thomas Deighton, division roadmaster on the Great Northern at Whitefish, Mont., has been promoted to general roadmaster of Lines East, with headquarters at Duluth, Minn., succeeding **R. S. Kniffen,** who has been appointed trainmaster.

W. O. LeBer, superintendent of the Montreal & Southern Counties, with headquarters at St. Lambert, Que., has been appointed safety engineer of the Central region of the Canadian National, with headquarters at Toronto, Ont., succeeding **George A. Kell,** who retired on January 1.

W. R. Dunn, division engineer of the Shamokin division of the Reading, with headquarters at Tamaqua, Pa., has been transferred to the Reading division, with headquarters at Reading, Pa., replacing J. S. Goodman, promoted. **W. H. Woltemate** will succeed Mr. Dunn as division engineer of the Shamokin division.

Purchases and Stores

L. V. Hyatt, supervisor of material standardization of the Missouri Pacific, has been appointed commissary purchasing officer, with headquarters as before at St. Louis, Mo.

Mechanical

S. J. Stark, master mechanic on the International-Great Northern at Houston, Tex., has been transferred to the Gulf Coast lines at Kingsville, Tex., succeeding **T. E. Carter,** who has been transferred to the International-Great Northern at Houston.

J. B. Blackburn has been appointed mechanical engineer of the Chesapeake & Ohio, with headquarters at Richmond, Va., succeeding **S. B. Andrews,** who has been appointed engineer of motive power as announced in the *Railway Age* of February 8, page 417.

W. Walker, formerly locomotive foreman on the Western region of the Canadian National at Saskatoon, Sask., and recently acting master mechanic of the Prince Albert division at Prince Albert, Sask., has been promoted to master mechanic of that division, succeeding **W. L. Loomis,** deceased.

J. T. Slaven, assistant master mechanic on the Coast division of the Southern Pacific, has been promoted to master mechanic of that division, with headquarters as before at Bayshore, Cal., succeeding **C. R. Burroughs,** who retired on January 1 after 43 years of service. **F. A. Schilling** has been appointed assistant master mechanic of the Coast division, to succeed Mr. Slaven.

J. C. Stump, master mechanic on the Chicago & North Western at Escanaba, Mich., has been promoted to assistant superintendent of motive power and machinery, with headquarters at Chicago. **O. Protz,** master mechanic at Winona, Minn., has been transferred to Escanaba, succeeding Mr. Stump. **J. W. Anderson,** assistant superintendent of motive power and machinery at Chicago, has been appointed master mechanic at Winona, to replace Mr. Protz.

The jurisdiction of **C. B. Hitch,** master mechanic of the Cincinnati division of the Chesapeake & Ohio, has been extended to include the Russell division, and his headquarters have been removed from Covington, Ky., to Russell. **W. M. Evans,** master mechanic of the Russell division, with headquarters at Russell, has been appointed assistant master mechanic of the Cincinnati division at Covington.

W. T. Westall, district master car builder on the New York Central Lines west of Buffalo, N. Y., at Collinwood, Ohio, has been promoted to special assistant superintendent of rolling stock, with headquarters at Cleveland, Ohio. **Emil Erickson,** general foreman of the car department at Adrian, Mich., has been appointed acting district master car builder of the Third district at Collinwood, succeeding Mr. Westall.

Special

L. C. McOuat has been appointed general agricultural agent of the Canadian Pacific, with headquarters at Montreal, succeeding **James Dougall,** resigned.

Dr. E. V. Milholland, medical and surgical director of the Baltimore & Ohio, with headquarters at Baltimore, Md., has had his jurisdiction enlarged to include direct charge of medical and surgical services.

William M. Kennedy, assistant superintendent of the relief department of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed superintendent of this department, replacing **W. J. Dudley,** deceased. Mr. Kennedy is a native of Scotland, and was educated in the public schools and the City College in Baltimore, Md. He entered the service of the Baltimore & Ohio in 1901 as a stenographer, and served in that and other capacities in different departments until 1918, when

William M. Kennedy

he was appointed assistant superintendent of the relief department, which position he has held until his recent appointment.

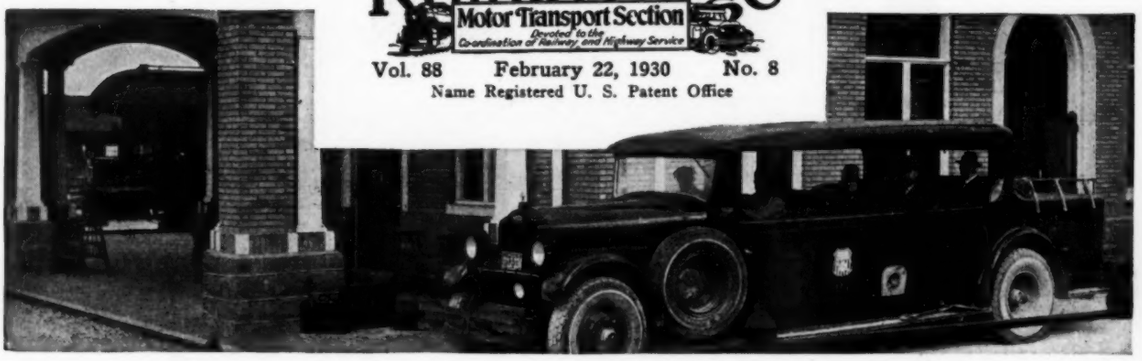
Obituary

Samuel George Strickland, federal manager of the Chicago & North Western during federal control of the railroads, died at Marine on St. Croix, Minn., on February 19. Mr. Strickland retired from active railway service in 1920 after 40 years in the operating departments of the North Western and the Chicago, St. Paul, Minneapolis & Omaha.

Otis O. Ogden, vice-president and general manager of the Natchez & Southern, with headquarters at Natchez, Miss., died at his home in that city on December 22, at the age of 68 years. Mr. Ogden had been vice-president and general manager since 1920, following 17 years of service with the Yazoo & Mississippi Valley and the Missouri Pacific.

Linton W. Stubbs, formerly resident engineer on the Queen & Crescent route (now part of the Southern) and engineer in charge of the construction of the causeway at Galveston, Tex., died at Los Angeles, Cal., on January 18, at the age of 74 years. A native of Georgia, Mr. Stubbs entered railway service in 1880 as assistant engineer on surveys and construction of the Vicksburg, Shreveport & Pacific (now part of the Illinois Central System). Later he served with this road as resident engineer in charge of construction and reconstruction and as resident engineer of maintenance on the Queen & Crescent at New Orleans, La. Following his work on the Galveston causeway he was engaged in the engineering department of the Southern Pacific, retiring from active service approximately 15 years ago.

Railway Age
Motor Transport Section
Devoted to the Coordination of Railway and Highway Service
Vol. 88 February 22, 1930 No. 8
Name Registered U. S. Patent Office



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Motor Transport Editor

F. L. Jacobus
Associate Editor

Walter J. Taft
Associate Editor

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Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 88 *February 22, 1930* *No. 8*

The Job of the Division

THREE and a half months have elapsed since the last meeting of the Motor Transport Division. It is three and a half months until the next meeting of the division. What progress is being made by the division in the direction of better organization, better representation of all the railways, and better studies of the problems of railway and highway co-ordination? How much better and more worth-while will the next meeting at Atlantic City be than was the last meeting in Toronto?

The Motor Transport Division, organized to meet a real need for a place of interchange of experience on questions involved in railway operation of motor coaches and motor trucks, has yet some distance to go before it will be organized and functioning on as efficient a basis as it should be in order to do its work properly.

Granting that the division is a new one and is still handicapped by its newness, and admitting also, and quite rightly, that the division has already done some good work, the fact remains that it is not yet functioning in such a manner as to enable it to do properly the job that is on its hands.

Transportation Standards Changing

The country is in the midst of vast changes in its transportation system. The transportation standards of a few years ago are being ruthlessly swept aside, and new standards are being set up. The most potent factor among the reasons for these changes is the motor vehicle. The motor vehicle has completely upset the idea of what constituted transportation which was held at the time when the railways offered virtually the only means of sending something from place to place. Automobiles and motor coaches are taking the short-haul passenger business of the railways; and as improved roads are extended, there is reason to believe that these motor vehicles will assume the task of handling practically all the short distance passenger movement in this country. Long-distance motor coach lines, by setting up a system of what might be called second-class travel, are not only cutting in to some extent on the long-haul passenger business of the railways, but moreover are creating a large new group of long-distance travelers by reducing the expense of such travel to a level which will bring it within the means of a greater number of people. The motor truck, at the same time, is assuming the burden of handling more and more of the short-haul l.c.l. freight traffic.

What Future for Rail Traffic?

While new and improved means of transportation usually exhibit some tendency to create new traffic, it nevertheless seems quite probable that motor trucks are now carrying a certain amount of l.c.l. freight traffic which was formerly handled by the railways. Some authorities on transportation have already predicted that the railways will lose their short-haul passenger traffic to automobiles and motor coaches, and their short-haul l.c.l. freight traffic to the motor truck. At the same time, these authorities have predicted that the railways will lose their long-haul passenger traffic to air lines, leaving in their hands only the job of transporting the carload freight traffic of the country. Whether or not these predictions are accurate, the present fact is that tendencies in these directions have already become well defined.

Surely under such circumstances, it behooves railways to utilize every means at hand to determine first of all how much they are being affected by these changes in transportation, and second, what means they can adopt to adjust themselves to these changes.

Proper Support Lacking

It was to undertake this job that the Motor Transport Division was formed by the American Railway Association. It would seem that such a job would arouse the interest of railway officers all over the country. It would seem that railway officers, whose business is the furnishing of transportation, would recognize the necessity of acquainting themselves with the nature of the changes that have taken place and also the means of

adapting themselves and their railways to these changes. Yet only about a hundred of them have attended meetings of the Motor Transport Division, and some of these not regularly. In a distressing number of instances chairmen of Motor Transport Division committees have not attended the meetings of the division, and futhermore have not submitted reports. Even those committee chairmen who have taken an active part in the work of the division have frequently been unable to secure the complete co-operation of other railway officers in their territories, so that their reports have been virtually one-man affairs.

Granting that the purposes of the Motor Transport Division are sound and that it is reasonable to expect that large numbers of railway officers should feel it essential to attend its meetings, the question arises as to why they have not done so. Is it because so few officers attend the meetings that the programs leave something to be desired? Is it because the programs leave something to be desired that so few officers attend the meetings? The answer to both questions is, yes. How then can this circle of causes and effects be broken?

Questions Demanding Answers

The first step, in the opinion of some of the leading members of the division, is to strengthen its organization, and then embark upon a program which more nearly covers those problems with which the division should be most vitally concerned. Here are some of the questions which are in the minds of railway officers, and to which the answers should be provided by the division: Can motor coach service be profitably substituted for branch line passenger train service, and what are the obstacles in the way of effecting such substitutions on a nation-wide basis? How much and what kind of traffic are the transcontinental motor coach lines securing, and how much of this is business which, without the presence of motor coaches, would be handled by railway? Can long-distance motor coach lines be operated profitably at existing low rates? What reasons are there for and against co-operation on the part of railways in providing motor coach service between competitive points? How much freight are motor truck lines carrying, and why are they able to secure this traffic? Can railways afford to meet motor truck competition with any form of rail service, or can they afford to meet motor truck competition with motor truck operation? What will be the effect on the welfare of the railways if they lose their passenger and l.c.l. freight traffic to other independent carriers?

These are only a few of the important transportation questions which are now begging for an answer. It is the job of the Motor Transport Division to find the answers. It should initiate whatever measures will strengthen the organization of the division to enable it to answer these questions. The time to do this is now.

Extending Rail Service by Motor Truck Operation

SOON after efficient motor transportation was made possible by the development of suitable motor vehicles, students of transportation saw in it, as one of its most important characteristics, a facility highly advantageous in its ability to extend regular transportation service to points beyond the limits of existing transportation facilities. They visualized the motor coach and the motor truck as a ready means of pushing what might be termed the frontiers of transportation back beyond the "end of track" of the railways. Localities not enjoying railway service, and which could not promise a sufficient volume of traffic to justify the provision of railway service through extension of tracks, it was thought, might readily support regular motor coach and truck service, the expense of installation of which is relatively small.

However, a large part of the development of motor transport during the last few years has been along existing railway lines. Motor coach and motor truck lines have been established parallel to railway lines, instead of beyond them. As a result, motor vehicles have as yet played a relatively insignificant part in the anticipated program of extension of existing transportation service.

The reasons for this are obvious. Motor vehicles require good roads, and most of the good roads so far constructed lie between centers to and from which there has always been a substantial volume of traffic, and consequently railway service. Pioneers in motor vehicle operation, many of them operating on a shoestring, were forced by circumstances to begin their operations along lines which gave promise of bringing in the greatest immediate profit, and these seemed to be between points where a considerable volume of traffic was already moving by rail.

There have been instances, of course, of the extension of existing transportation service by the provision of highway transportation. Regular motor vehicle transportation is now available between a number of points which have never had direct rail communication. An example is to be found in South Dakota where motor truck lines, most of them operating north and south, are supplementing railway lines, most of which run east and west in that state. The Chicago, St. Paul, Minneapolis & Omaha now owns the principal trucking company in the state. By means of this company the Omaha is making available to its patrons regular freight transportation service to and from many points which formerly they could not reach directly. Where the railroad stops, the truck begins.

This is true co-ordination of railway and highway service. Today no form of transportation is sufficient in itself. The highest level of transportation efficiency is

reached when each form of transportation works with the other, each doing exclusively those things which it can do better than the others. In its truck operations in South Dakota, the Omaha is working out a genuine co-ordination of transportation facilities.

Expanding Operations and Adequate Maintenance

STEADY and often rapid expansion of service has marked the development of most railway motor coach operations. Because of this, making their garage facilities keep pace with increasing operations has been one of the most pressing problems of the maintenance departments of railway motor coach operating companies. Servicing and maintenance facilities adequate to keep 10 or 15 vehicles in operation are made entirely inadequate by the expansion of operations requiring the use of 25 or 30 vehicles. Frequently, by the time the maintenance facilities have been adjusted to such an increase in the number of vehicles to be taken care of, further expansion in operations requires still more equipment, so that the maintenance machine again falls behind.

The maintenance of railway motor coaches under existing conditions is quite different from the maintenance of railway cars and locomotives. Railway operations are more stabilized, changes are more gradual, and programs can be devised with some assurance of what the future will hold. Motor coach operations, however, are changing almost from day to day. There have been several instances in which the number of motor coaches operated by railway subsidiaries has increased by more than one hundred vehicles within the comparatively short period of one year. It is quite obvious what a heavy load this places upon the maintenance department. It is a very able maintenance officer who can adjust his machine so that it will keep pace with the demands made upon it.

The garages of the most successful motor coach operators have these characteristics: First of all, they have sufficient room and equipment to meet economically and efficiently the present servicing and maintenance requirements. At the same time, provision is made for meeting a reasonably anticipated expansion in operations, without the necessity of going to disproportionate expense to take care of the housing and maintenance of the additional equipment. Furthermore, a way is left open to expand the garage facilities to a large extent if this should become necessary, without complete abandonment of existing facilities but by a mere extension of them.

The garage of the Northland Transportation Company in Minneapolis was designed with these considerations in mind. It was adequate until recently when the necessity arose for the maintenance of a considerably larger number of vehicles than could possibly be accommodated in it. As a result of the foresight exhibited in the design of the garage, it has been possible, to construct an addition to it which will enable the garage to take care of the enlarged fleet of equipment with little rearrangement of the original garage plan. An eye to the future is essential equipment of a motor coach garage designer.

More Unnecessary Motor Coach Lines

MANY new interstate motor coach lines were established during January. In fact, it is stated that more such lines began business during that month than in any previous month. The reason for this sudden, intensive and quite unnecessary activity was the imminence of legislation providing for the regulation of interstate lines. The word apparently went out that the Parker bill is likely to be passed at the present session of Congress, and that if anyone wanted to start an interstate line without running into difficulties he had better do so at once. Consequently, equipment was bought and a number of new lines began operation over interstate routes already adequately or more than adequately served by older motor coach lines.

The theory of the new operators apparently was that, if the Parker bill should be passed, it would be amended so that lines in operation on the date of passage rather than on December 2, as now provided in the bill, would be able to secure their operating certificates without difficulty.

It has been intimated that the intention of some, if not all, of these lines, which have so precipitately begun to operate motor coaches on interstate routes, is to stay in business only until interstate regulation becomes a fact, at which time their operating certificates may have some value and may be readily disposed of at a good price to operators who have pioneered on these routes, and desire to protect them.

If a strong argument in favor of the passage of the Parker bill were needed, it is furnished by this utterly unnecessary establishment of new and duplicate lines during the last few weeks. When transportation lines can be started, not to meet a need for transportation, but merely to build up a nuisance value which can be cashed in at a later date, there is need for a change. That change will be effected by the passage of the pending Parker bill. The longer the passage of the Parker bill is delayed, the longer will be continued the present unstable conditions in an important branch of the transportation business.

Motor Trucks

Extend Railway Service

System of highway lines in South Dakota operated by C., S. P., M. & O., to increase business opportunities of its patrons

RAILWAY transportation facilities in the state of South Dakota are rather peculiar. Although the state has several east and west lines, there is a minimum of north and south railway lines. The effect of this lack of adequate transportation facilities has been to restrict considerably the trading opportunities of cities, the geographical location of which make them logical distributing centers for the state. Such a city is Sioux Falls, S. D., at the eastern edge of the state. Lack of a direct means of transportation to many smaller communities in the state once prevented Sioux Falls jobbers from enjoying the amount of business which the location of the city seemed to justify.

Trucks Create New Sales Areas

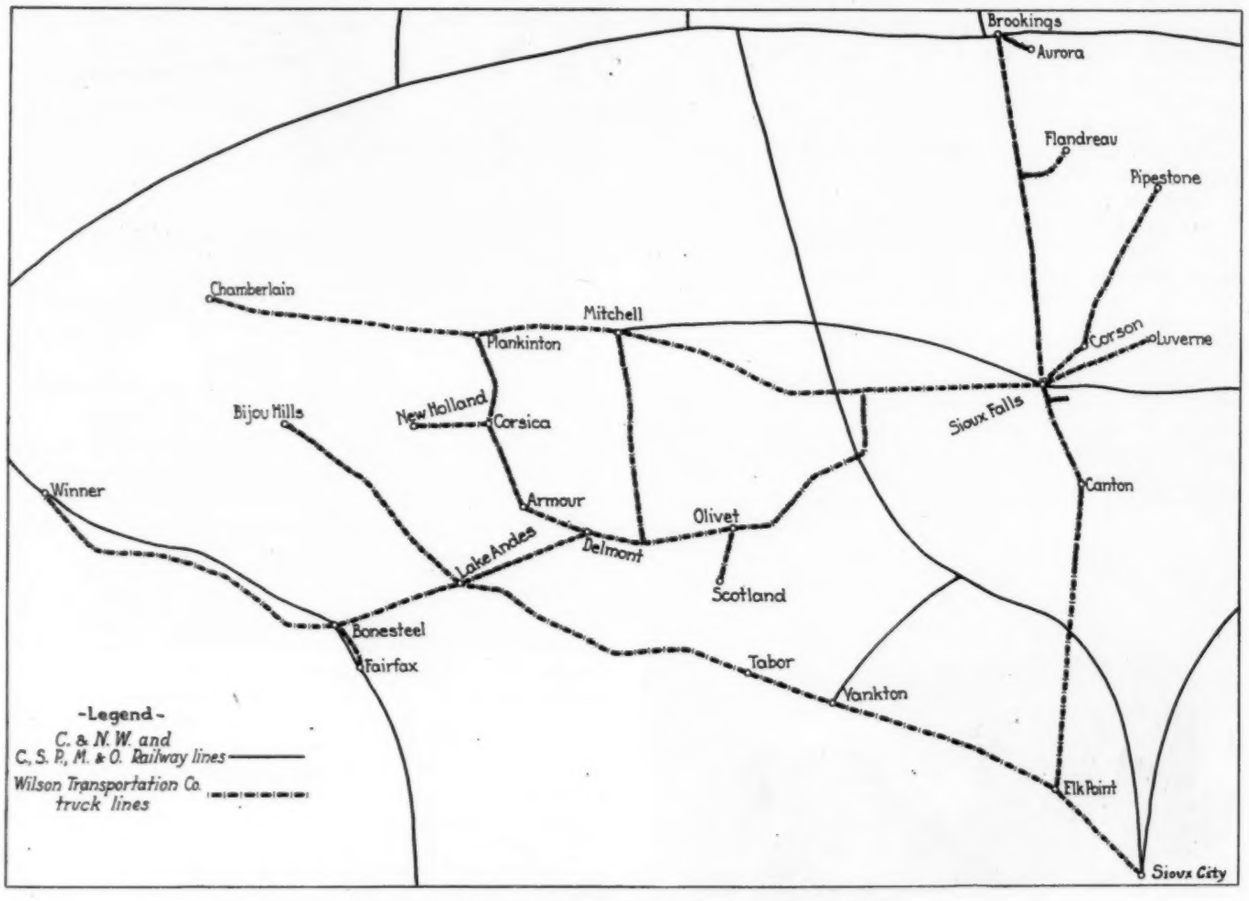
With the advent of truck transportation, this situation was changed. An independent company, the Wilson Transportation Company, was organized by William Wilson of Sioux Falls, to take advantage of the geographical location of the railroads in South Dakota, which are predominantly east and west lines, by providing cross-state north and south trucking lines. This created new sales areas for jobbers and distributors of Sioux Falls, and secured revenue for hauling goods, which traffic the railways could not hope to enjoy under existing conditions of only east and west railway lines. The Wilson Transportation Company prospered, as did the jobbers and distributors of Sioux Falls, and the highway transportation system, developed now on such a large scale, is a direct result of the sales energy of the jobbers of Sioux Falls.

Although the Wilson truck lines are operating in direct competition with the railway lines of the Chicago, St. Paul, Minneapolis & Omaha only to a small degree, they appeared to offer an opportunity for co-ordinated railway and truck service in which the truck lines would extend existing railway service to points beyond the railway lines. With such a plan of co-ordination in mind, the Omaha took over the Wilson Transportation Company on September 1, 1929. As new officers of the transportation company, Carl R. Gray, Jr., vice-president and general manager of the Omaha, was elected president of the transportation company; Charles A. Leggo, assistant secretary and land commissioner of the railway, was elected secretary of the transportation company; C. P. Nash, local treasurer of the Omaha at St. Paul, was elected treasurer of the transportation company; and William Wilson, the organizer of the Wilson Transportation Company, was retained in a more or less advisory capacity as vice-president of the transportation company. The Wilson Transportation Company is a $500,000 corporation, with $280,000 capital stock issued and paid in. It has in excess of $200,000 in real property and equipment.

Purposes of Truck Operation

The purposes of the management of the Omaha, in taking over the trucking system of the Wilson Trans-

Loading Trucks at the Company's Sioux Falls Station



How Truck Lines Extend the Omaha's Rail Service

portation Company, were well defined. It is the belief of the management that truck operations should be a localized system, radiating from jobbing centers; and that the railroads, in operating cross-haul truck lines, will profit by the increased distribution of goods from these jobbing centers; by being able to haul in greater volume carloads of merchandise through jobbers to the larger sales areas opened up by the cross-haul truck routes. It is likewise believed that long truck hauls parallel to railroad lines are not desirable, and in the long run unprofitable.

It is believed by the management that truck lines should be established radiating from centers of distribution and going across country, providing "inland" towns en route with adequate and reasonable service. It is believed that the railroad will benefit thereby, by increasing the amount of carload business brought into these distribution centers. Truck transportation, it is thought should be corollary to and not a mere duplication of parallel rail transportation.

Sioux Falls Center of Operations

Sioux Falls, S. D., is the point from which principal lines of the Wilson Transportation Company radiate. Twelve routes radiate from Sioux Falls. Route No. 1 is from Sioux Falls to Brookings, the round trip involving an operation of 116 miles. One 3-ton Reo truck is used on this route, it departing from Sioux Falls at 11 a.m., and arriving at Brookings at 3 p.m. Route No. 2 is the important Sioux Falls-Sioux City route, the round-trip distance being 192 miles. Three of the 3-ton Reo trucks are assigned to this route, departure being from Sioux Falls at 9 a.m., with arrival at Sioux City at 1 p.m., and on the return trip, departure from Sioux City at 5 p.m., with arrival at Sioux Falls at 10 p.m.

Route No. 3 is from Sioux Falls to Canton, a round-trip distance of 48 miles. One 3-ton Reo truck is assigned to this route, it leaving Sioux Falls at 2 p.m., and arriving at Canton at 4 p.m. Route No. 4 is from Sioux Falls to Freeman, a 2-ton Reo truck being assigned to this route, the round-trip length of which is 106 miles. The truck leaves Sioux Falls at noon and arrives at Freeman at 5 p.m. Route No. 5 is from Sioux Falls to Flandreau, the round-trip mileage being 86. The 2-ton International Harvester truck assigned to this route leaves Sioux Falls at noon and arrives at Flandreau at 3 p. m.

Route No. 6 is from Sioux Falls to Ihlen. The 3-ton Reo truck assigned to this route leaves Sioux Falls at 1 p.m., and arrives at Ihlen at 5:30 p.m., covering 80 miles on the round trip. Route No. 7 is from Sioux Falls to Pipestone, a distance of 104 miles round trip. Two Reo trucks of 3-ton capacity are assigned to this route, departures being from Sioux Falls at noon and 4 a.m., with arrivals at Pipestone at 3 p. m., and 7 a.m.

Route No. 8, Sioux Falls to Luverne, is covered by a 3-ton Reo truck, leaving Sioux Falls at noon and arriving at Luverne at 1:30 p.m. The round-trip length of this line is 64 miles. Route No. 9, Sioux Falls to Scotland, has a round-trip length of 160 miles. A 2-ton Reo truck is assigned to this line, departure being from Sioux Falls at noon and arrival at Scotland at 5:30 p.m. Route No. 10 is from Sioux Falls to Lake Andes, the mileage covered on this route being 264 miles round trip.

Two Reo trucks of 3-ton capacity are assigned to this line, departure from Sioux Falls being at 6 p.m., with arrival at Lake Andes at 1 a.m. The other two routes from Sioux Falls are Routes 20 and 21. Route 20, Sioux Falls to Mitchell, is handled by two trucks, one a 3-ton Reo and the other a 3-ton G.M.C. truck. The round-trip length of this line is 154 miles, departure from Sioux Falls being at 4 a.m., and 1 p.m., and arrival at Mitchell at 7:30 a.m., and 5 p.m. Route 21 is from Sioux Falls to Emery, a round-trip distance of 106 miles. One 2-ton G.M.C. truck is assigned to this operation, the schedule calling for its departure from Sioux Falls at 1 p.m., and arrival at Emery at 5 p.m.

Mitchell an Important Center

Mitchell, S. D., is the next most important operating center. Trucks are operated from Mitchell to Chamberlain, 75 miles, Mitchell to Corsica, 44 miles, Mitchell to Parkston, 26 miles, Mitchell to Armour, 59 miles, Mitchell to Bridgewater, 38 miles, and Mitchell to Plankington, 25 miles. Two 2-ton G.M.C. trucks on

Small Truck Used for Pick-up Work

the Mitchell-Chamberlain route leave Mitchell at 11 a.m., and arrive at Chamberlain at 10 p.m. A 2-ton G.M.C. truck on Route 16, Mitchell-Corsica, leaves Mitchell at 11 a.m., and arrives at Corsica at 3 p.m. A truck of the same type and size, operating on Route 17, Mitchell-Parkston, leaves Mitchell at 11 a.m., and arrives at Parkston at 3 p.m. Another 2-ton G.M.C. truck operating on Route 18, Mitchell-Armour, leaves Mitchell at 11 a.m., and arrives at Armour at 4 p.m. A truck of the same type and size on Route 19, Mitchell-Bridgewater, leaves Mitchell at 11 a.m., and arrives at Bridgewater at 3 p.m. Route 22, Mitchell-Plankington, is handled by a 2-ton G.M.C. truck leaving Mitchell at 11 a.m., and arriving at Plankington at 2 p.m.

The longest route operated by the Wilson Transportation Company is Route No. 11, Sioux City to Lake Andes, a round-trip distance of 290 miles. A 3-ton Reo truck is assigned to this operation, departure from Sioux City being at 5 p.m., and arrival at Lake Andes being at 2 a.m. Route No. 12 is from Lake Andes to Tabor, a round-trip distance of 94 miles, the 2-ton Reo truck assigned leaving Lake Andes at 8 a.m., and arriving at Tabor at 2 p.m. Route 13 is from Yankton to Lake Andes, a round-trip distance of 156 miles. The 3-ton Reo truck assigned to this route leaves Yankton at noon and arrives at Lake Andes at 6 p.m. Routes 14 and 14-A are from Lakes Andes to Winner and Gregory, respectively. A 2-ton Reo truck is assigned to each line, both departing from Lake Andes at 8 a. m.,

Standard 3-ton Reo Truck Operated in Inter-City Service

one arriving at Winner at 4 p.m., and the other at Gregory at 3 p.m. The round-trip length of the Lake Andes-Winner line is 204 miles; of the Lake Andes-Gregory line, 120 miles.

Substantial Volume of Traffic

The Wilson Transportation Company handles a quite substantial amount of business. September, 1929, the first month in which the company was operated by the Omaha railroad, showed a total of 116,139 ton miles of freight handled. In October, the company handled 158,540 ton miles; in November, 129,208 ton miles; and in December, 118,871 ton miles. The company has recently constructed a large new freight station at Sioux Falls, which is used by its own trucks and those of a number of independent truckers operating to many points within a radius of 75 miles of Sioux Falls.

Two-ton and three-ton trucks are standard on the inter-city lines of the Wilson Transportation Company, although the company also owns some 1½-ton trucks which are used to facilitate emergency repairs and also for pick-up and delivery of smaller shipments. The Company operates 14 3-ton Reo trucks, one 3-ton G.M.C. truck, five 2-ton Reos, eight 2-ton G.M.C trucks and one 2-ton International Harvester truck.

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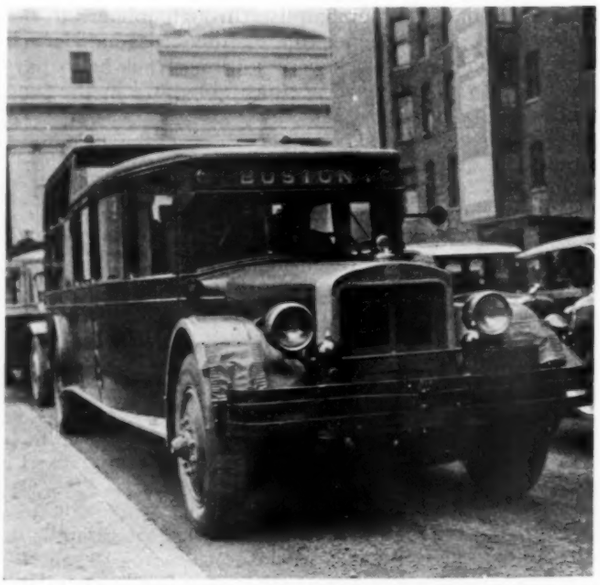


New York-Boston Coach of the New England at New York

Interior of Repair Shop—Note Exceptionally Large Windows.

Boston & Maine

Builds New Garage

New facilities at Cambridge, providing more space and better location, will speed up motor coach repair work

TO obtain more adequate facilities for overhauling motor coaches, where sufficient space and light would make possible a better correlation of the various repair departments and also furnish improved working conditions, the Boston & Maine Transportation Company constructed a new repair shop in Cambridge, Mass., and moved into it in November, 1929. This shop is equipped to do all major overhaul work on the fleet of 93 motor coaches which are operated throughout northern New England.

The B. & M. motor coach operation extends over 30 routes covering 1200 miles of highway, a part of which includes summer tourist runs. The summer runs, of course, are discontinued between October and April, and the equipment is brought to the Cambridge shop for repair, if necessary, or is used to replace other coaches on year-'round runs, which may be scheduled for repairs.

Motor coach equipment is inspected and overhauled on a fixed mileage basis. Running repairs are made every night on equipment used on long runs, with a more complete inspection made at 2000 miles at the time of greasing.

A semi-overhaul is made at 20,000 miles and a complete overhaul at 60,000 miles. The semi- and complete overhauling is done in the Cambridge shop which has equipment to do all necessary repair work.

The old accommodations in Cambridge were found to be too small and did not have proper entrance and exit facilities. The new repair shop is a two-story, fire-proof reinforced concrete structure located at 88 First street, three blocks from Lechmere Square, the location of the B. & M. railroad office building. The building was put up according to the specifications of the B. & M. company but is owned by the contractor. The Boston & Maine Transportation Company leases the second floor, having 15,000 sq. ft. of floor area, as a repair shop and the first floor is leased to another company for truck storage.

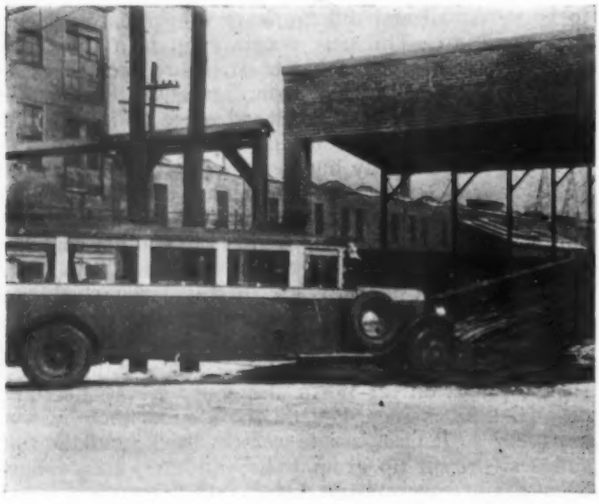
Unusual light is provided by the large steel sash windows which are placed on all four sides of the building. These windows are glazed with rough wire glass, and have ventilators, which are equipped with fusible plugs, on the north and south elevations. Additional light is furnished on the second floor by four skylights. All piers are of cement brick, and the outside walls, built up around the windows, are of 8 in. light weight concrete tile, fitted with a terra cotta wall cap where exposed above the roof. The roof is composed of gypsum tile slabs and is covered with heavy

Everything Has Its Place in the Well-Arranged Stock and Tool Room

Body Repairs Are Made While the Mechanical Units Are Being Overhauled

The Shop Has All Equipment Necessary For Making Repairs to Motor Coaches

The Paint Shop Is Light, Well Ventilated and Readily Accessible to the Repair Shop



Motor Coach Entering the Ramp to the Repair Shop On the Second Floor

The Electric Operated Doors at the Top of the Ramp Fold Into an Overhead Track

roofing material which, after being coated with hot asphalt, is covered with gravel. Copper gutters and conductors take care of all roof drainage. The floor is of granolithic concrete with a slight pitch to assist drainage.

The building is set back from the street a distance of 100 feet, and a two-way ramp has been built from the street to give access to the second floor. It is of reinforced concrete construction, the driving surface being covered with carborundum gravel. The ramp is covered with an asbestos protected corrugated roof, supported by a steel framework. The boiler room and coal storage are located under the ramp.

Two overhead, electrically operated doors, 10½ ft. wide and 12 ft. high, at the head of the ramp, give access to the shop. These doors are controlled by switches in two places, one placed at the door itself and the other located on the wall in the shop. This feature saves walking each time to the door.

The building is sprinkler-protected throughout, with an extra line of sprinklers in the paint shop. Heat is furnished by a 68 in., seven section, water tube boiler, operating at a maximum pressure of 15 lb. per sq. in. The office and paint shop are heated by radiators, and the repair shop is heated by two York heat-diffusing blower type units. All piping, window frames and exposed steel work inside the building are protected by aluminum paint.

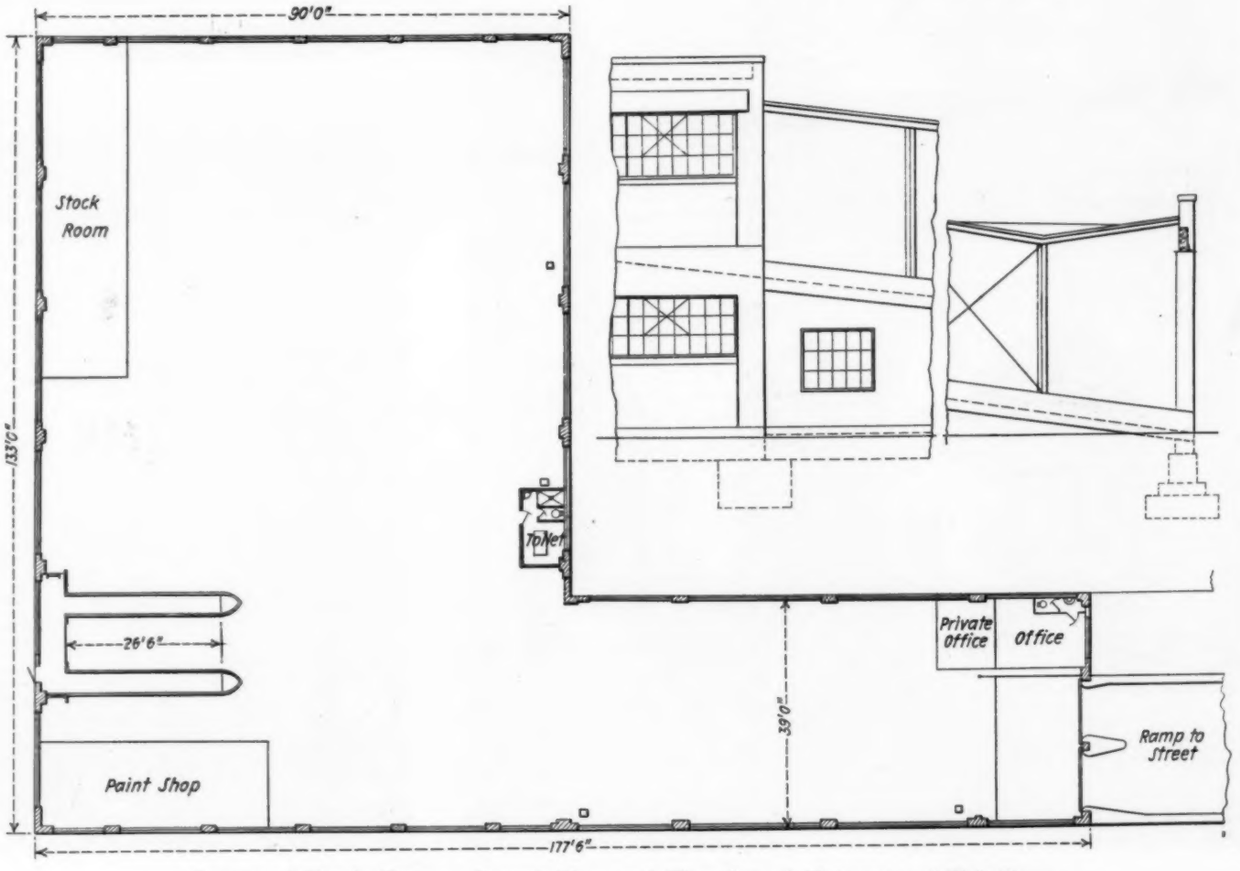
Gasoline is purchased in tank car lots and stored in two large tanks located outside of the building and underground. From these it is pumped, as needed, to a smaller tank of 1200 gal. capacity located under the first floor. An Eltco meter system is used in the garage, and consists essentially of a dial meter and a nozzle-controlled filling hose, with an electric pump to lift the gasoline from the 1,200-gal. tank. The nozzle control has been found to save a large percentage of gasoline which was previously lost due to over-filling. Gasoline and oil record sheets are placed on the wall beside the pump.

Two repair bi-levels are built in along unique lines. The law in Massachusetts does not allow enclosed pits in garages. This regulation has been observed by having an exit door, placed at the lower level, open out of doors to a balcony, which extends over the canal running along the east side of the building. This opening prevents an accumulation of gas at the lower level. The floor of the bi-levels slants toward a cast iron drain located near the door which leads to the outside of the building. Two 100-watt electric lamps, recessed into the side walls and equipped with vapor proof globes, illuminate the under part of the coach. Air and grease line connections are also provided. The pits are 3 ft. 6 in. wide and 4 ft. 6 in. deep with a 5 in. angle iron around the top edge to guide the wheels of the coach. Two fire extinguishers are within easy reach of the mechanic.

The Paint Shop

The paint shop is designed to be as nearly fire-proof as possible. Pyroxylin lacquer, which is highly combustible, is used for refinishing the bodies and special care must be taken to prevent fire. The walls are made of 3 in. concrete, carefully sealed to be vapor tight, and firedoors, which are kept shut are used to give access to the repair shop. A blower with an exhaust outside the building, gives a complete change of air every three

(*Continued on page 514*)



Layout of Repair Shop on Second Floor and Elevation of Entrance and Exit Ramp

Some Typical Western Mot

Used by Companies in whic[h] the Sou[th]

Globe, Ariz.—Beginning of Apache Trail

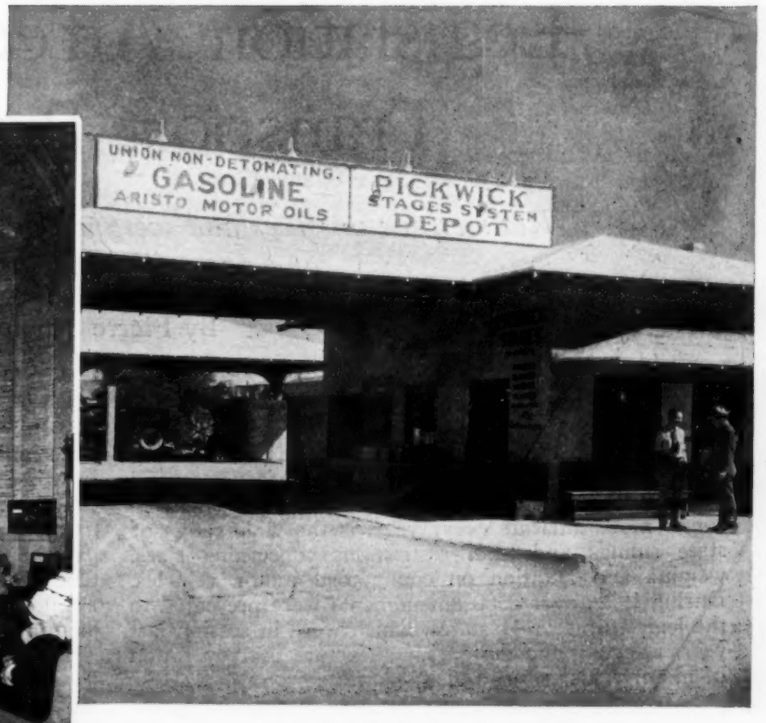
Loading Platform of the California Transit at Oakland, Cal.

California Transit Company Station at Oakland, Cal.

Pickwick Stages Hotel [T]erminal in [L]

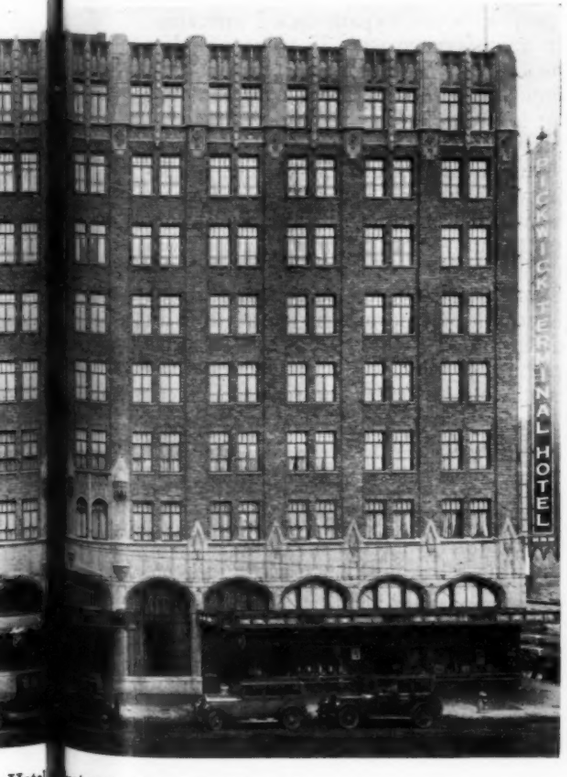
Motor Coach Stations

Southern Pacific is Interested



Pickwick Station at Yuma, Ariz.

Interior of California Transit Company's Oakland, Cal., Station



Hotel minal in San Francisco

Interior of Waiting Room, Pickwick Station, El Paso, Texas

Legislation Affects Motor Transport Progress*

Restrictions on sizes and weights handicap manufacturing and operating development

By Pierre Schon

General Motors Truck Company

ONE of the most serious problems confronting designing engineers, truck manufacturers and operators during the past, and one which becomes more intricate every year, is the wide range of state rulings and legal restrictions concerning sizes, weights and taxation on commercial motor vehicles. During 1929, over 2500 amendments were presented to the legislatures of 41 states, which were in session last year, affecting the design, manufacture and operation of motor vehicles.

It has been customary in the past for certain selfish interests to support amendments to existing rules and regulations that were intended to handicap the economical operation of motor trucks and motor coaches. Legislation of this type was in many instances directed against both motor coaches and trucks, and obstacles were created in various ways, such as restrictions on size, weight and speed of motor vehicles below practical limits, interfering with their economical operation or, in some cases, excessive taxation enacted to prevent motor coaches or trucks from entering competitive fields.

However, it is gratifying to know that, during recent years, a broader vision of the transportation field in general is gradually welding the various transportation methods into a closer unit of co-ordination. This is evidenced by the fact that railroads are now operating over 3000 motorcoaches and over 6000 trucks; and, during 1929, transportation by airplane has been coordinated with transportation of passengers by rail. Other interests also have taken it upon themselves to change existing rulings and submit bills with amendments for new or more severe regulation of motor-vehicles.

Some Typical Bills

Among the large number of bills affecting motor vehicles presented to the various legislatures during 1929, a few have been selected to serve as typical exhibits.

During the 1929 session of the Michigan legislature, a representative submitted a bill to reduce the height of motor vehicles. Upon investigation, instigated by our curiosity to find out why this representative should be thus interested, it was found that a furniture truck, with a bed spring fastened onto the rear end of the body and sticking up in the air, passed his home one evening and tore down his telephone wire. So the representative submitted a bill to reduce the height of motor vehicles in the State of Michigan.

In New Jersey, a bill was submitted to increase license fees on all motor trucks 100 per cent. In California, a bill was submitted to force every motor vehicle to be equipped with an ash tray to collect cigarette butts. In Missouri, a bill was presented to prohibit the use of trailers. In Illinois, a measure was submitted to force truck operators from other states entering Illinois to pay the regular Illinois state license fees. The legislature of a western state debated a bill supported by the Painter's Union to prohibit the use of spray guns for painting motor vehicles.

In Michigan, a number of bills were presented to the legislature last March attacking the operation of motor trucks from three different angles (a) reductions in height, length and weight; (b) higher license fees; and (c) a higher gasoline tax. Measure (a) affected the earning capacity of commercial vehicles; measures (b) and (c) would have increased the operating cost per mile. If any one of these bills had succeeded in passing, operators would have been forced to increase freight rates or absorb these extra burdens in their profit and loss statement.

The wide variety of regulations, controlling sizes and weights of commercial vehicles, is one of the greatest handicaps interfering with the expansion of interstate transportation. In a conference with 25 transportation engineers from the General Motors Export Co., it was pointed out by some of these men from overseas that it was very difficult to promote long-distance hauling by motor truck in foreign countries due to the frontiers and the national boundaries between the countries. In the United States, we have free interchange of commerce between the various states, and there are no restrictions placed on the movement of merchandise from one state into another.

Interstate transportation by motor truck and motor coach, however, is crippled by permanent restrictions in the free movement from one state into another; in other words, imaginary boundary lines have been erected between our various states that hinder the free movement of vehicles used for interstate commercial transportation. This condition has developed without any intent on the part of our national government or the state legislatures to put obstacles in the way of motor vehicle operation, but it is a result of lack of interest and co-operation between manufacturers and operators. Spasmodic efforts, in fighting a bad bill, when conditions become critical, are not sufficient to safeguard the progress of commercial transportation.

Tabulations, giving the maximum dimensions and weights allowed by law in the 48 states and District of Columbia, reveal the interesting fact that only in two adjacent states can be found a similarity in regulations; namely, California and Arizona.

In our central states, with highly developed interstate

* From a paper presented at the annual meeting of the Society of Automotive Engineers in Detroit, Mich., on Jan. 23.

commercial transportation, a motor truck complying with the regulations in Indiana, cannot enter any of the adjacent states, due to variation in weight restrictions. When it comes to dimensions in the length of vehicles or combinations thereof, vehicles permitted in Illinois, Michigan and Pennsylvania cannot enter the state of Ohio, or vice versa:

Lengths	Single Vehicle, Ft.	Combination Ft.
Ohio	30	85
Michigan	40	60
Illinois	—	65
Pennsylvania	33	85

A case is pending in the United States District Court in Toledo at this time in which a long-distance operator from Michigan, as defendant, is trying to protect an investment of $100,000 in vehicles which are longer than 30 ft. and which have been in operation for several years through the state of Ohio; but, recently, several Ohio county officials have decided to enforce the 30-ft. ruling and prevent this operator from passing through Ohio.

Many motor coaches are operating in Ohio today where the operators are actually at the mercy of county officials because the vehicles exceed the 30-ft. legal length limit.

In another case, operation of a fleet of specially built vehicles had to be discontinued in Connecticut, due to a ruling reducing the permissible over-all length of a vehicle from 40 ft. down to 33 ft., by a state law passed during the last session of the Legislature in Connecticut, in the early part of 1929. Another example of sudden change to regulatory restrictions, which caused a severe financial loss to an operator, due to reduction in the over-all combination length from 85 ft. down to 75 ft. was enacted in Minnesota during 1929.

Operators are subject to attacks from various angles, and a variety of restrictions may be made into laws by any one state, thus causing premature obsolescence of commercial vehicles aggregating millions of dollars. Operators in some states are unable to plan their replacements and additions of new vehicles, due to the uncertainty as to how possible changes in legal restrictions may affect those vehicles purchased today within a period of one or two years, or five years, the profitable service life of a motor-truck.

Table 1
Maximum Height, Width and Length Allowed by States for Commercial Vehicles

Height			Width		Length — Single Vehicles		Length — Combination of Vehicles	
No. of States	Ft.	In.	No. of States	In.	No. of States	Ft.	No. of States	Ft.
22	None		5	None	23	None	22	None
4	12	..	1	84	2	28	1	40
1	12	2	6	90	9	30	1	50
12	12	6	1	93	11	33	5	60
1	13	6	34	96	2	35	2	65
1	14	..	2	102	2	40	1	75
8	14	6	..	..	..	..	17	85

Motor Truck Design Handicapped

The problems of the designing engineer and the manufacturers are multiplied when attempts are made to incorporate into a certain heavy-duty motor-truck design all factors required to permit the finished product to be used under the 49 different varieties of state laws. This situation becomes even more complicated when the many different speed regulations are taken into consideration. With the modern type of brake design and the application of vacuum booster brakes and of compressed air, the operation of pneumatic-tired trucks is comparatively safer than is that of passenger cars. This was brought out recently by statistics compiled in Massachusetts, where the percentage of accidents with motor trucks was actually lower than with passenger cars. Speed regulations in most states are antiquated in relation to the improvements which have been made in the safety features controlling the operation of commercial vehicles. Designing engineers are constantly searching for improvements to reduce the cost of operation and incorporate greater operating efficiency in the design, but these efforts are handicapped by impractical legal restrictions.

The manufacturer of a heavy-duty vehicle is restricted by law, in many cases, to a limited market for the vehicle in certain states, because a vehicle which may comply with the regulations and rulings in one state cannot be legally operated in other states. Unless the efforts of manufacturers and operators associations are coordinated in the future, there is very little relief in sight from the present situation. This question has been discussed pro and con for many years, but no satisfactory results have been obtained so far in formulating state legislation along sane and practical lines of procedure. The Motor Vehicle Conference Committee of the National Automobile Chamber of Commerce has done considerable work along this line and has been very active for a number of years in promoting the idea of uniform motor vehicle legislation. The National Conference on Street and Highway Safety, under the able leadership of Herbert Hoover as chairman, formulated a Model Act known as the Hoover Code during 1926. One part of this Code is entitled: "Uniform Act Regulating the Operation of Vehicles on Highways." The so-called Hoover Code is basically sound, and it can be recommended as the best effort put forth so far to obtain greater uniformity on legal rulings and restrictions.

Table 2
Practical Weight Regulations for Vehicles Equipped with Pneumatic Tires

Maximum Weight	Highway			
	Class A, Lb.	Class B, Lb.	Class C, Lb.	Class D, Lb.
Per Axle if spaced more than 8 ft. apart	22,500	19,000	15,500	12,000
Per Axle if spaced less than 8 ft. apart	17,000	14,000	11,000	8,000
Per Inch Width of Tire	700	625	550	475

The Hoover Code

The Hoover Code is one of the most constructive pieces of work which has been done to protect the interest of commercial transportation; but at that time the solid tire was still a factor and the rapid growth of pneumatic-tire applications could not be foreseen and, therefore, the Model Act had to be set up to meet existing conditions as of 1926. With more pounds of payload for each pound of dead weight, made possible with modern high-speed vehicles on balloon tires, it is felt that the time has arrived for considering certain changes in the recommended weight regulations as set up in the Model Act, so that these regulations may conform to the needs of today and the needs of the future. The weight regulations as set up in the Hoover Code are shown in Table 2.

The weight regulations as originally set up in the Model Act have met with considerable objection on the part of legislators, highway engineers, trailer manufacturers and operators. Axle weights are considered excessive and, in the allowable gross vehicle weights, no distinction is made between a four-wheel truck and a

four-wheel trailer. Both of these vehicles may have the same number of axles or wheels, but the carrying capacity and load distribution are entirely different. In a heavy-duty motor truck of conventional design, the strength of the rear axle is calculated to carry from 70 to 80 per cent of the gross weight, while the front axle only carries from 20 to 30 per cent.

Pneumatic versus Solid Tires

Present regulations and restrictions on commercial vehicle weights may be practical for solid tires, and possibly some highway engineers have good reasons to recommend that commercial motor vehicle weights should be reduced below the present limit to protect gravel roads in their states; but, from tests made by the Bureau of Public Roads in connection with the Society of Automotive Engineers and the Rubber Association of America, conclusive evidence is available that pneumatic tires cannot cause any serious damage to well-constructed pavements. Motor trucks were tested for shock or impact reaction on the pavement, the trucks being equipped with various types of tire and driven over obstructions of different heights at various speeds. The object of these tests was to determine the stresses induced in the road surface. Special instruments were developed to measure maximum impact force with sufficient accuracy to meet the needs of obtaining adequate information. The propaganda that has been spread in the past that motor trucks are tearing roads to pieces has caused a very unfavorable reaction against commercial motor vehicles in many quarters, and the time has arrived when our entire industry, including manufacturers and operators, are finding themselves with backs against the wall fighting for their very existence in protecting the transportation of passengers as well as heavy tonnage of merchandise against legislation which, in some cases, may be called confiscatory.

Education Needed

With the solid tires fast passing out of existence, educational work, proving that pneumatic tires do not injure the roads, is necessary to offset the results of past propaganda against commercial vehicles. After careful study of this subject with a number of experienced transportation men affiliated with the motor truck and the trailer industry, manufacturers, private operators, public carriers and highway engineers, we submit, in Table 2, a recommended scale of weight regulations in which maximum vehicle-weights have been eliminated, and gross axle-weight limitations are based on axle spacings and weights per inch of tire only. This recommended schedule is based on the classification of highways, as set up in the Hoover Code, according to the carrying capacity of the pavement, taking into consideration the difference in design of commercial vehicles, difference in load distribution on truck versus trailer axles, carrying capacity of pneumatic tires and the need for uniform weight regulations.

To carry out the plan of classifying highways according to the carrying capacity of the pavement, it seems commendable that some federal government agency, such as the Bureau of Public Roads, the Department of Agriculture, or the United States Army Engineers should be assigned to supervise the classification of all highways. The Model Act, as formulated in 1926, is basically sound and, with a few slight amendments to adapt it better to modern needs for the present as well as the future, undivided support should be given to the Hoover Code by every organization interested in the development of commercial transportation.

Boston & Maine Builds New Garage

(*Continued from page 509*)

minutes and is operated at all times when a coach is being painted. Further fire protection is provided by a 3 in. sill which extends across all door openings and by a drain which runs outside the building at the floor level. If a fire should occur it would not run into the repair shop. All benches are made of steel. Vapor proof lamps are placed at the proper angle for correct illumination, three on the dark side of the room and two on the light side. All switches are located outside of the room as required by law.

The tool room is 20 ft. by 56 ft., enclosed with a wire mesh partition. Hand tools and small parts such as bolts and screws are located near the entrance door at the center of the shop. All parts and supplies are kept in accessible bins. Special racks have been made to keep heavy and bulky parts in order, such as springs, drive shafts and brake drums. Fenders and other light sheet metal parts are hung from the ceiling. A desk is placed at the window to allow the stock room clerk to keep a record of all supplies given out. The office, located at the head of the ramp, is constructed of red tile, and is 27 ft. long by 12 ft. wide, with a private office 10 ft. by 12 ft.

The shop equipment includes an 8 cu. ft. air compressor which is used for operating air tools, spray guns and for inflating tires; also a 40 ton hydraulic press, a Weaver portable floor crane, a motor stand, a Van Norman valve refacer and valve reseater, a 10 in. floor grinder, a 6 in. bench grinder, a brake relining machine, a sander and polisher, a battery charger, floor jacks, a chain repair bench, and portable work benches supplied with vises.

There is also a bench saw for use in making body repairs and complete welding and brazing equipment.

* * *

Front View of an A.C.F. in Richmond, Fredericksburg & Potomac Highway Services

New York's Newest Terminal

Central location, protected loading area and commodious waiting room are among unique features of this modern facility

THE Central Union Bus Terminal in New York will have the largest enclosed loading space of any motor coach terminal in the city. It is used by the Reading and the Jersey Central Transportation Companies. Located at Forty-second street between Seventh and Eighth avenues, it is a short half block from Times Square, and two express subway stations, with a third under construction, are just around the corner, giving unequalled connections for other sections of the city.

The terminal occupies the main floor of the new building housing the Dixie Hotel, a twenty-four story structure, with entrances to both hotel and terminal on Forty-second and Forty-third streets. While it is a part of the hotel building, the terminal will be under separate management.

The location has been selected with consideration for the convenience of both suburban and long distance passengers. The center of the theatrical district is but half a block away, and most of the large department stores are within walking distance. For the long distance traveler, the hotel facility is attractive.

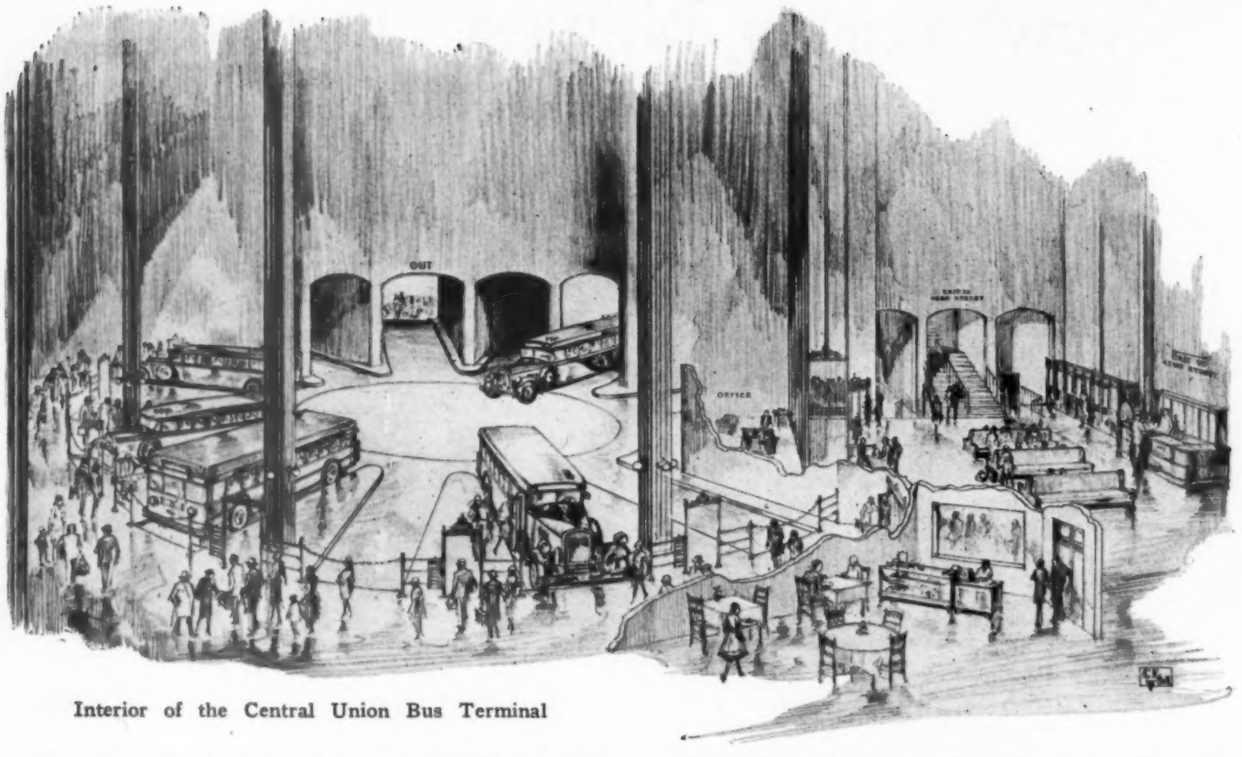
The Central Union Bus Terminal and the Dixie Hotel Located at 241 West Forty-Second Street, New York

The Central Union Bus Terminal has been designed to afford the utmost comfort and convenience. All requirements of the traveler are provided for either in the terminal itself, or in the Dixie Hotel. The main waiting room, directly adjacent to the loading platform, is provided with comfortable seats for waiting passengers, a smoking room, wash room, baggage and parcel rooms, news stand, information bureau, and telephone booths. A lunchroom under the management of Loft, Inc., the chain restaurant and confectionery store interests, will provide a necessary terminal facility. Elevator service is provided to the terminal waiting room, connecting with all floors of the hotel.

The unique design of the loading area in this terminal permits the location of a transportation facility in this area of high real estate values. The loading platform and waiting room are located 5 ft. below the level of the street, the motor coaches entering and leaving by separate ramps. The traffic on Forty-third street is one way, going from east to west and the ramps are placed at the proper angle to permit easy entrance and exit without interference with other traffic. A motor coach coming down the entrance ramp drives directly to a turntable, from which 10 loading stands radiate like tracks in a locomotive roundhouse. The coaches are placed in the stands headed away from the turntable so that greater loading space may be obtained by having the front entrance and exit door open at the widest part of the loading platform. A coach leaving the terminal backs on to the turntable, is swung around so that it is headed for the exit ramp, and is driven out.

The turntable is 35 ft. in diameter and covered with a slip-proof steel flooring, with the center depressed 4 in. below the rim to provide a safety feature, should the driver inadvertently leave his brakes released, the saucer shaped surface preventing the coach from rolling off the turntable. Likewise, the loading stands have a 2 in. drop away from the turntable, so that if the brakes are released, the coach will not back out and cause an accident. Drainage of water or oil which may collect on the surface is provided by several small drains in the flooring.

The turntable is electrically operated and is controlled from the dispatcher's room, which is located only a few feet from the rim and in a position where the movements of vehicles in the loading area can be readily observed. The loading stands are level with the rim of the turntable, with the loading platform 6 in. higher to permit a lower step up to enter the coach. A high degree of safety is obtained since no passengers are permitted to cross the run-way space.



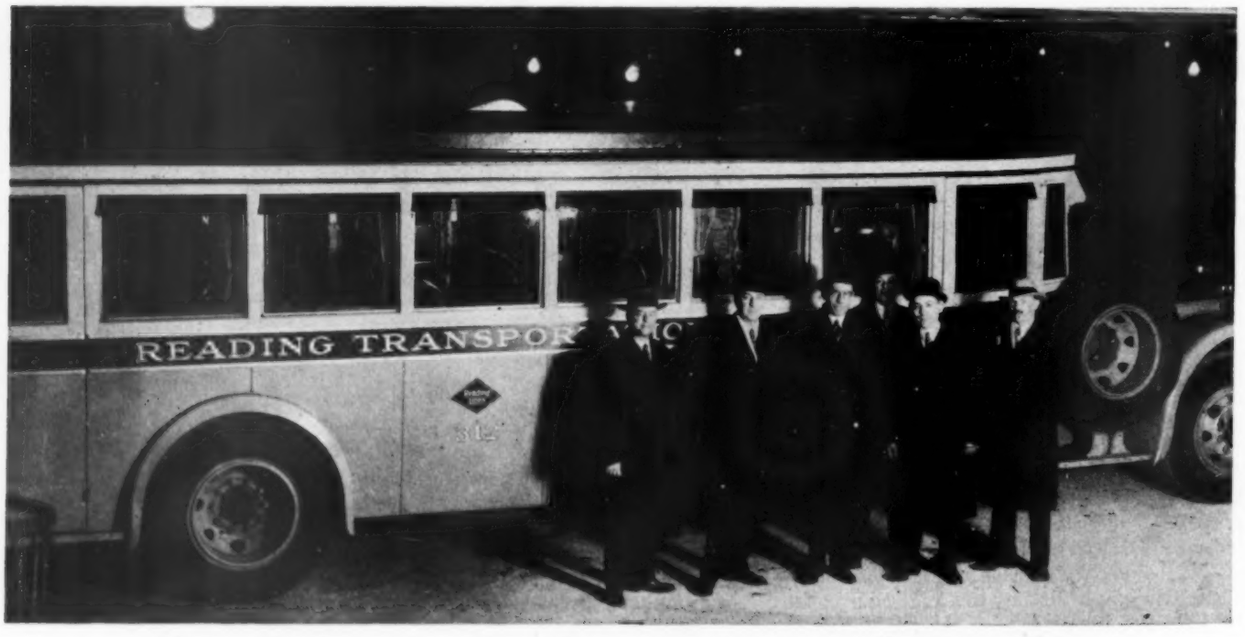
Interior of the Central Union Bus Terminal

The movement of each coach is controlled by the dispatcher through an electric signaling device. Every coach stall has a system of red and green lights which are flashed from a board in the dispatching room, the red light indicating danger, and requiring the driver to wait, and the green light giving authority to back out on the turntable and proceed on his run. The ramps are likewise controlled to prevent danger of collision upon entering or leaving the terminal. The dispatcher also announces the time of departure of each coach. He wears a telephone mouthpiece which is connected to annunciators located in the waiting room and on the loading platform.

All loading and unloading is under cover. The only other motor coach terminal in New York which has indoor loading and unloading is operated by the Baltimore & Ohio at Forty-second and Lexington avenue for their train connection service.

Arrangements for Loading

There are two sets of doors leading to the loading area from the waiting room, each of which serve the coaches on one half of the loading stands, the platform extending around to all stands. A passenger does not need to walk more than 100 ft. to reach the farthest coach. Both the waiting room and the loading area



Officers of Reading and Jersey Central Highway Subsidiaries Inspecting the New Terminal

are heated, and a careful study of ventilation has been made, based on the experience of the Holland Tunnel engineers. A forced draft system is installed, with the outlets placed around the edge of the turntable and over the rear end of each coach, which effectively removes exhaust gas before it can travel to other parts of the building. The entrance and exit doors are also left open at all times in order to provide additional ventilation.

The Reading and Jersey Central Transportation Companies have used the terminal since December 9, 1929,

Motor Coach Leaving the Terminal

in temporary quarters. Several other large coach operating organizations have committed themselves to utilize this facility shortly after completion. The terminal which is under the management of Scarr Transportation Service, Inc., consulting engineers, was officially opened on February 14.

Competition or Monopoly?

A STATEMENT of the attitude of the Iowa Railroad Commission toward competition between motor coach lines clarifies the opinion of the commission in the Interstate Transit Lines and Pickwick-Greyhound case. The commission has not abandoned its policy of restricting competition between motor coach companies, despite its decision granting permits to both the Pickwick-Greyhound Lines and Interstate Transit Lines for intrastate operation over the Lincoln Highway. According to B. M. Richardson, member of the commission, the recent case was decided entirely on its merits, and represented no new departure in policy. Destructive competition is to be avoided in the future, as in the past.

Mr. Richardson's statement follows:

In the early stages of motor coach line growth, the board adopted the policy that destructive competition would be detrimental to the public interest. In granting permits for new service, the commission has sought to preserve exclusive routes, as far as possible, for single carriers who are qualified to render the service required. The motor coach business in Iowa is in its infancy, although it is increasing at the rate of about 1,000 route miles a year.

It may be that we are just reaching the stage of development where competition will add value to the service on some routes, rather than detract from it.

Heretofore, the first qualified carrier in the territory has received preference and protection of his route, from competitive lines on the ground that he was pioneering in a new business, and that, in consideration of the business hazard, he should not be subjected to interference or competition unless the public convenience demanded more service than he was able to render.

The Pickwick-Greyhound and Interstate Transit decision does not lay down a new policy. It takes into consideration the fact that, as interstate lines, one was first to apply for permission to do intrastate business, while the other claimed preference because of its affiliation with railroad interests which already had made large investments in Iowa, and, under the old rule, was entitled to protection in its field.

Each company opposed the other's application. Both being strong, well-organized corporations, it was evident that competition for local business between them would have no disastrous results, so far as their operation is concerned. Properly arranged schedules might benefit the public service, and local lines already operating in parts of the field concerned were to be protected from infringement.

Thus, in granting permits to both concerns, the commission decided the case entirely on its merits. We have discovered that each case presents distinct problems. They are unlike cases involving judicial precedent, and therefore we cannot rely in full upon precedent or upon a set policy. The commission still adheres to the theory that the public interest cannot best be served by destructive competition.

Railways Active in Coach Operation

In a further statement, Mr. Richardson describes the motor coach situation as it now exists in Iowa. This statement follows:

We have in Iowa 32 certificated passenger carriers, with an aggregate route mileage of 5,394. Passenger lines in 1928 carried over 1,600,000 revenue passengers. All motor carriers operating under certificate pay, in addition to the state 3 cent gas tax, ¼ cent per gross ton mile for the use of the highway. Four of the largest interurban railroad companies are operating motor coach lines. All have lines to the extent of the territory served by the rail lines, and one of them has gone into the motor coach business on a large scale, having several hundred miles of motor lines, radiating around the territory and outside of the territory that they now serve with their rail lines.

The Illinois Central, through a subsidiary, has a motor coach line between Dubuque and Waterloo. The Chicago, Milwaukee, St. Paul & Pacific operates a 40 mile motor coach line paralleling a branch rail line whereon it removed local passenger train service. The Chicago, Burlington & Quincy, through a subsidiary, is now or will soon be operating under a certificate between Burlington and Council Bluffs across the state of Iowa, paralleling its main line. The Chicago & North Western, through a subsidiary, the Interstate Transit Lines, one of the parties to the Lincoln Highway case, will have 368 route miles across the state, paralleling its main line.

The general situation in Iowa is that the business is becoming more stabilized by reason of the lines getting into fewer and better hands, with a continued improvement of the highways, which is going along at a very rapid rate in Iowa at present. There will be further expansion in the motor coach field.

THE PICKWICK CORPORATION, parent concern of the Pickwick-Greyhound Lines, transcontinental motor coach operators, recently opened its new Temple Square Hotel in Salt Lake City. This building is six stories, of fireproof construction, has 200 rooms, and cost $600,000. Garage and shop facilities operated in connection with the new hotel terminal represent an additional investment of $35,000. This Salt Lake project is the sixth in a proposed chain of Pickwick hotels. The corporation is now operating five other hotel terminals which it owns outright, or holds under lease. These are located at San Diego, San Francisco, Anaheim, Kansas City, and El Paso. The Kansas City hotel terminal, costing $3,500,000 will be completed in about five months. Three other hotels are planned to be erected this year at Eureka, Cal., Phoenix, Ariz., and Tulsa, Okla.

Co-ordinating Rail and Motor Coach Service at Hot Springs, Ark.

In One Year—

A 4,000-Mile System

Missouri Pacific Transportation Company sets record for rapid growth—Operating cost 17 cents per mile

By G. W. Marriott

Assistant to vice-president and general manager,
Missouri Pacific Transportation Company

EXPANSION, in a period of only twelve months, from 260 miles of highway transportation service in Missouri and Arkansas to 4,000 route miles, serving eight states, is the record of rapid yet substantial growth held by the Missouri Pacific Transportation Company. Rapidly though it has grown, the record of the company indicates nevertheless that its expansion has been on a sound basis, and has been carried out without sacrifice of operating efficiency.

From its very beginning, the company established the policy of providing a convenient, safe and dependable highway transportation service, co-ordinated with the rail service of the Missouri Pacific Lines. This co-ordination of service has resulted in the elimination of considerable rail passenger mileage, and the consequent speeding up of the balance of the service, both freight and passenger. In addition, the frequency of motor coach schedules has effected closer connections with the more important trains, and has afforded a more personal service to patrons residing along the highway, who are able to board the coaches almost at their doors.

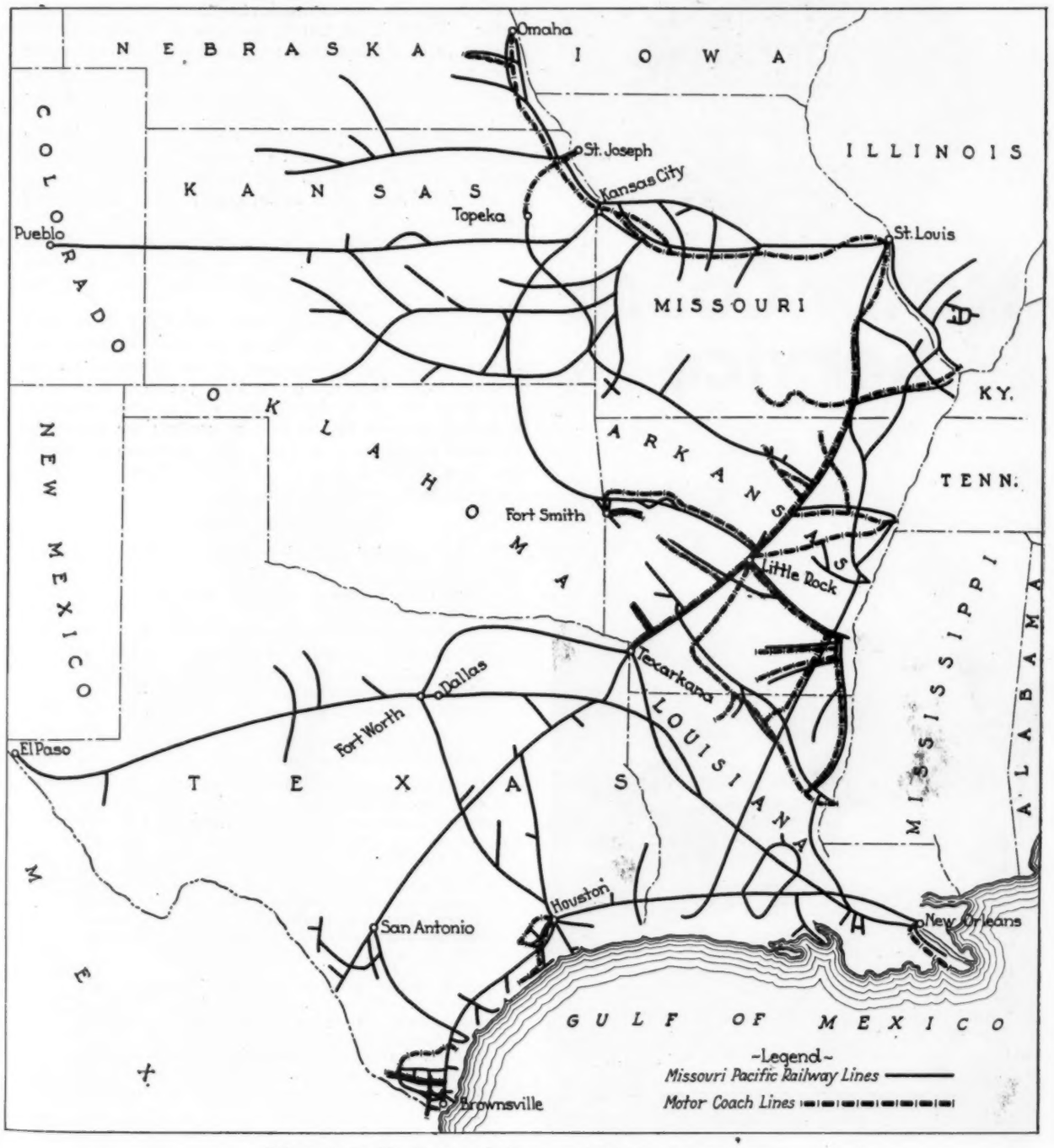
The Missouri Pacific Transportation Company was formed as a subsidiary of the Missouri Pacific Lines, to supplement the rail passenger service and to provide a convenient method of transportation in those communities where neither rail nor highway service was available, as well as to provide this means of transportation for those who preferred to travel on the highway. In order that this service might be most efficient, the schedules have been adjusted and readjusted, from time to time, to determine the most convenient hours of arrival and departure, and equipment has been carefully selected and apportioned to the various runs.

Since the organization of the company, 63 of the most modern and up-to-date coaches have been pur-

chased, which makes a total of 185 motor coaches owned, counting the equipment taken over from acquired independent lines. The equipment that was in the service of the existing lines at the time the company took them over was, in most cases, in a generally run-down condition, and a large amount of work and extensive replacement of parts has been necessary to make it serviceable. Such of these coaches as were of the more modern types have been overhauled, modernized and painted in the standard colors. Others have been junked, and such parts as were serviceable have been salvaged. All of this work, together with all necessary heavy repairs and upkeep of equipment, is handled at the central shops located at Little Rock, Ark. In addition, the transportation company maintains divisional shops at Kansas City, Mo., St. Louis, Poplar Bluff, Walnut Ridge, Ark., McGehee, Ferriday, Houston, Tex., and Brownsville.

In the interests of economical operation, the company has erected large gasoline storage tanks at central locations in the various territories in which it operates, and purchases its gasoline in tank car lots at a considerable saving. Lubricants, likewise, are purchased in carload lots. Tires are purchased on a mileage basis.

The motor coach territory is divided into six districts, each under the jurisdiction of a district supervisor, who reports both to the railway superintendent in his territory and to the vice-president and general manager of



Missouri Pacific System Railway and Motor Coach Lines

the transportation company. The district supervisors have on their staffs dispatchers and starters, who handle the details of supervision of operations in much the same way as dispatchers on the railroad.

There are many occasions when the motor coach lines and the rail lines can effect an interchange of service and facilities, and this is one of the important factors in the success of both companies. An illustration of this can be found in the use, by the transportation company, of the rail line stations and facilities. At points where the rail stations are not located convenient to the center of the towns, or adjacent to the highway, it is, of course, necessary to establish other stations exclusively for motor coach passengers. But wherever possible, the railway stations and the station ticket agents serve both motor coach and rail line passengers.

The Motor Coach Time Table Cover

One of the most important services that the motor coach lines can render to the communities along the system, which is at the same time a source of considerable revenue, is the handling of United States mail, express packages and newspapers. The transportation company has provided for such service generally in connection with its operations.

Special Parties and Tours

A lucrative field for the profitable operation of a motor coach line lies in the development of special party traffic. There is an untold amount of business available, it is easily handled, and it is of immense value from an advertising point of view. During the winter season, all-expense motor coach tours have been operated through the Rio Grande Valley.

The valley, and practically any other point in the United States, can now be reached by direct motor coach service through an interchange agreement recently completed with other motor coach lines. Connecting lines included in the agreement are those of the Arkansas Transportation, the Atlantic & Pacific Stages, the Dixie Motor Coach Corp., the Smith Motor Coach Co., the Southwestern Transportation Co. and the Ward-Way Transportation Co.

During the last month, two additional lines have been acquired, one paralleling the New Orleans and Lower Coast Railroad, a part of the Missouri Pacific system, from Algiers, La., to Fort Jackson, furnishing additional service to that section of Louisiana which is becoming famous for its orange groves; the other, the Cardinal Stage Line, as heretofore announced, extending from Kansas City to Hiawatha, Kan., and from Topeka, Kan., to St. Joseph, Mo.

Operating Costs

Twelve months' operation reflect the following operating figures:

Total miles operated, Jan. 1 to Dec. 31	6,327,262
Total operating expense, same period	$1,106,265.27

The above operating expense, analyzed on the basis of cost per mile, appears as follows:

Total maintenance of plant and equipment, including superintendence, rents, maintenance of coaches, garages, shop expense and depreciation	$.0711
Total operating garage expense, including fuel, lubricants, employees and supplies	.0274
Total transportation expense, including superintendence, drivers, rents, station expense, collection and delivery of freight and express, loss and damage to freight and baggage, road expense and miscellaneous	.0448
Total traffic promotion and administrative expense, including superintendence, solicitation, advertising, rent, salaries and expenses of general officers and clerks, office expense, law expense and supplies	.0113
Total other general expenses, including employees' welfare, valuation, regulatory commission expense, amortization of franchises, injuries and damage, insurance, store-room labor and expenses, franchise requirements, joint operating expenses, rent of rolling stock, other general expenses	.0084
Taxes	.0118
Grand total expense per mile	.1748

Controlling the Speed of Your Equipment*

The purposes and characteristics of engine governors and the way in which they operate

By Arthur A. Bull

President and General Manager, Handy Governor Corp., Detroit, Mich.

AS applied to present day transportation equipment, the two fundamental reasons for the use of automatic speed control devices, or governors, are necessity and desirability. It seems futile to discuss the real necessity for governor equipment in connection with commercial transportation equipment because of its general acceptance by the industry, which is founded on the principles that have been regarded as fundamental from the early stages of development of the motor truck.

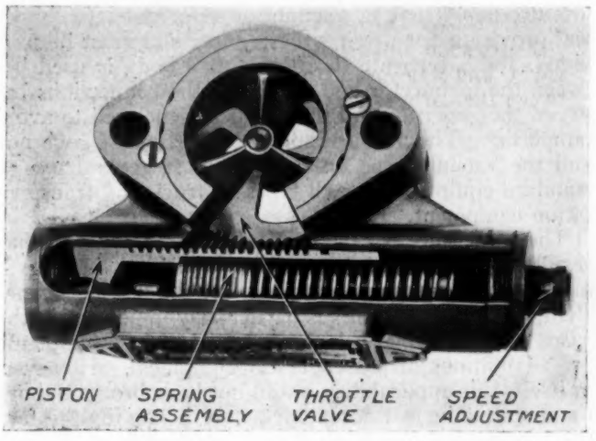
However, the factor of necessity can be considered from two distinct viewpoints: First, the vehicle builder, who realizes the limitations of the equipment and who must place a limit on the maximum operating speed to assure satisfactory operation and freedom from trouble; and second, the engine builder, who supplies power plants for the vehicle builders but has little to say about the axle ratios to be used or the relative engine and road speeds. Recognizing from experience that most of his troubles and complaints arise from excessive speeds, he must set a safe limit of speed on his engine and strongly urge his customer to apply suitable governing; or he must make a governor a standard part of his power plant.

In both of the foregoing situations, the governed speeds may be the maximum that is consistent with the engineering factors involved. The fleet operators' requirements generally will be for lower governed speeds than those set by the manufacturer, occasioned by the different operating conditions in different territories, the problem of maintenance costs, the transportation of merchandise that may be depreciated by excessive shocks, or in following out the desire to observe local traffic laws and the general interest of "safety-first" operations.

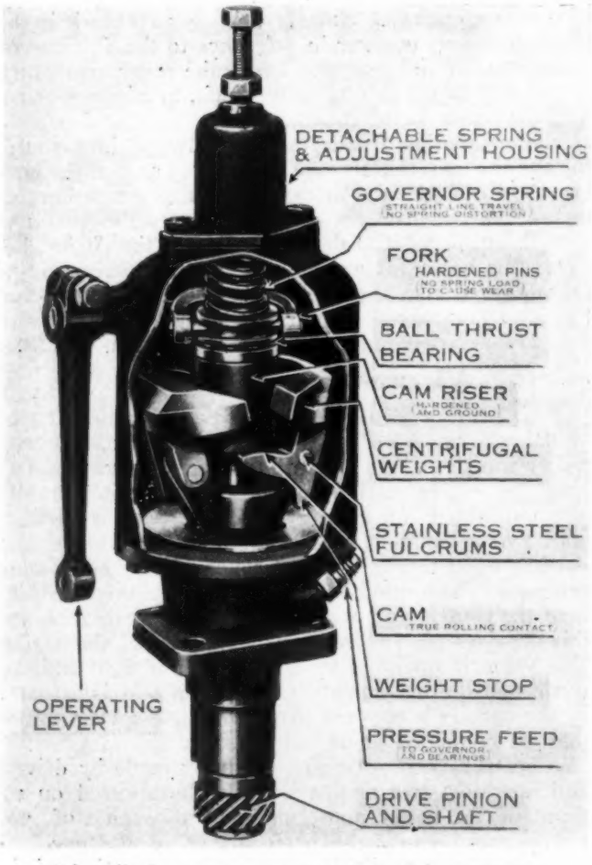
The desirability factor is not usually considered, yet there is a distinct measure of operating convenience and ease of handling with governor control which the driver of the vehicle learns to appreciate, and which adds to the benefits arising from the elimination of abuse through overspeeding beyond safe limits either intentionally or unconsciously. Moreover, with governor control, economies in fuel and oil costs per ton mile appear as definite results obtained from more uniform operation.

What can be regarded as the essential requirements of

* From a paper presented before the Society of Automotive Engineers, Transportation Section, at Toronto, Ont., on Nov 14, 1929.



Mixture Flow Velocity Type Governor



Mechanically Driven Centrifugal Type Governor

a governor? I quote from a prominent engineer, as follows:

(1) It must not affect the power of the engine at speeds below the full-load governed-speed.

(2) The speed difference between full load and no load should be held to the minimum; but, at the same time, this difference should not be so small that hunting or surging will occur.

(3) In the speed intervals between maximum load and no lead, running must be perfectly stable; that is, there must be no "hunting."

(4) While ease of adjusting the speed setting must be given some thought, it must not be obtained at the expense of the other items mentioned.

Present Types of Governors

The surviving types of governor are all in the general category of mixture-throttling variety in two distinct classes; the mechanically driven centrifugal type and the mixture-flow—that is, vacuum or velocity—type. Special provision for driving these governors must be provided, and a separate throttle control body is used between the carburetor and manifold, the connections between the governor and throttle being enclosed to avoid tampering. The mixture-flow-velocity type of governor and the vacuum type are now in most general use as standard equipment for all types of truck and transportation equipment.

The preference for the manifold type of governor has resulted, in a measure, from its adaptability, because it makes unnecessary any provision for the driving of mechanical devices and this is particularly important in the cases of commercial vehicles in which the power plants are adaptations of passenger-car equipment. However, in itself, this applicability would not have brought about its almost universal acceptance were it not for the fact that its performance is satisfactory and comparable with the best that can be obtained from mechanically driven devices. It has the further advantage that its range of adjustability usually is greater than that which can be satisfactorily obtained from the centrifugal-type governor unless it is of special form.

Operating Characteristic

Experience has indicated that, for maximum stability and speed control, the governor curve should have the minimum difference of 5 to 8 per cent between full load and no load speeds; and satisfactory results, so far as road operation is concerned, will be evident even though the difference between full load and no load is 15 per cent. This permissible range in the governor curve can be logically used when operating at speeds in excess of 2000 r.p.m., in contrast to what would be required if the engine were operated at speeds of 1000 r.p.m., such as was common practice in heavy-duty design many years ago.

It is significant to indicate that, in the case of the vacuum and the velocity-type governors, the accuracy of control increases with a decrease in speed; whereas, with the mechanically operated centrifugal type, the accuracy of control increases as the speed increases.

Velocity Type Governor Operation

The operating principle of the velocity-type governor is based essentially on the use of an offset throttle valve, usually of rectangular shape, which serves to produce the motive power and also controls the mixture volume which is contained within a flange, or adapter, and located between the manifold and the carburetor. The offset plate develops an operating torque on its shaft, due to the pressure difference above and below the plate indicating the general characteristics of this effort, or torque, in respect to angular displacement of the plate and relative speed. The torque is balanced by a spring in the housing that acts through the medium of the cam, which rectifies the resistance of the spring and produces a reaction equal to the torque curve of the plate. The operating pressures are substantial, and the difference in such pressures is of sufficient magnitude, with a small speed-difference, to create a movement of the throttle plate, which responds to the changes in load on the engine.

Mechanical Construction

Attached to the offset throttle-plate is a small stabilizing piston, operating in a cylinder attached to the flange of the governor. Its purpose is to facilitate the movement of the throttle plate toward a closed position and also to correct for the disturbance of the operating pressures on the throttle plate when the carburetor throttle below the governor throttle is closed, the effect of which is to open the governor valve. The vacuum piston is purposely made ineffective after the throttle plate is half closed, this having a practical advantage in that the governor valve cannot assume a full-closed position until the governor speed is reached, so that, during the normal operations of the carburetor throttle in accelerating or in changing gears, or under any condition in which the accelerator is let up to close the carburetor throttle, the governor valve is always partly open to eliminate any hesitation when re-accelerating, which is likely to occur when the governor closes and then has to re-open. The contour of the cam is substantially the same for all engines because this shape was derived from a definite mathematical equation that was established by careful calculation and tests on a large number of different engines. However, changes are made in the position of this contour in reference to the fulcrum of the cam itself and its contact with the roller arm which is attached to the throttle plate shaft, to advance or retard the action of the governor.

The installation of the governor between the carburetor and the manifold usually is arranged so that the governor throttle valve is at right angles to the carburetor throttle valve; in every possible instance the governor valve is set parallel to the center line of the engine, because this has a favorable effect on the distribution of the mixture. The mechanical construction is such that the governor cannot be tampered with easily, or rendered inoperative, unless the seals are broken.

Vacuum-Governor Operation

The operation of the vacuum-type governor is based on the relation of manifold vacuum to torque, or horsepower and speed. The operating energy is derived solely from the engine suction pressure and, as this is a definite and measurable quantity, the calibration is a simple matter of calculation notable for the accuracy and consistency of its results. It consists of a single body, comprising a cylinder and valve chamber. The throttle valve is of the rotary type, with venturi-shaped passages, and this provides for full volumetric capacity of the engine. The valve is operated by the piston through the gear teeth, and the movement of the piston that is actuated by the suction is opposed by the multiple-spring unit so that its combined value balances the piston pressure. The opposition to governing formerly made by drivers and operators has almost entirely disappeared on account of the better appreciation of the value of governors and because the performance of the governor equipment now available modifies the operation of the vehicle to a less extent than did the earlier devices.

Exterior of Modernized Motor Coath

Motor Coach

Equipment Modernized

N. E. T. rebuilds motor coach bodies to bring older equipment up to present-day standards of headroom and interior attractiveness

THE New England Transportation Company found that some of their motor coaches were becoming undesirable for use on important intercity runs due to a degree of obsolescence when compared with recently purchased vehicles operated either by the company or by its competitors. Several runs of this railroad-controlled operation are between relatively nearby points and the coaches do not make a high daily mileage. Progress has been made so rapidly in body design to increase comfort and convenience, that a coach three years old is, to a large extent, looked upon by the riding public as obsolete.

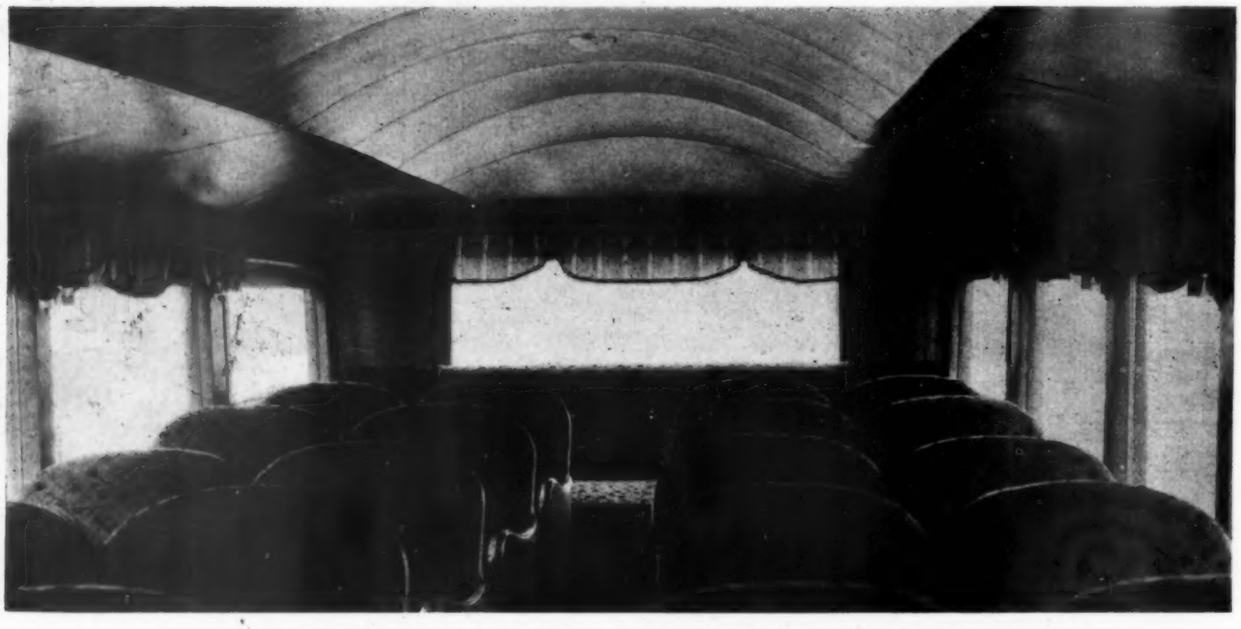
Work on First Coach Completed

The coaches when purchased were the best obtainable and they have been kept up to a high standard of operating efficiency by a carefully worked out system of inspection and unit overhaul. The bodies were conservatively designed and have good exterior lines in general, but the interiors do not have the proper head room, and the upholstery and body lining has become worn and soiled.

Considering the amount of useful service which could still be obtained from these motor coaches and the riding public's expressed desire for something new and different, it was thought desirable to modernize them, making such alterations to the body as would be required to make them compare favorably with the latest design. This work has been done under the supervision of D. V. Gearwar, mechanical superintendent, the work on one coach now having been completed.

The Work Schedule

The body was stripped to the framework. The outside panels and the inside leatherette lining on the sides and roof were removed as were the passenger seats. Defective members in the exposed frame were replaced, and additional reinforcements inserted to give greater strength. Steel knees of $\frac{5}{16}$ in. stock were placed at the intersections of the posts with the lower sill and with the belt rail. These were through-bolted to the posts before they were attached to the adjoining members to give the posts greater stiffness. The rear wheel housing was given particular attention to prevent the outer panel cracking in service. Knees were inserted at the intersection of the sill and post with the wheel housing and



Attractive Appearance Is Obtained by the Three Tone Upholstery and Window Decorations.

an additional steel ring, properly shaped and made of 1½ in. by ½ in. steel, was placed on the inside of the body and extending around the outer edge of the wheel housing with solid attachment to the floor on each end.

The wooden header strip, connecting the posts at the roof, was renewed and a strip of steel 3 in. by $\frac{5}{16}$ in., running the entire length of the body, was installed and connected to each post by a T-shaped fitting. This fitting was spot-welded to the steel header strip and attached to the post with seven wood screws.

Increasing Headroom

A particularly interesting feature of the reconstruction was the method of increasing the headroom. A section of the old roof, where greater headroom was required, was cut out, and a new roof built having 7 in. greater height, increasing the total clearance from 5 ft. ½ in. to 5 ft. 7½ in. The shape of this roof section was determined by drawing the coach to scale on a large blackboard and blending the lines into the general body shape to make the addition appear to be a part of the original design. This has been exceptionally well done as shown by the illustrations.

Roof Supports

The new roof section is supported by wooden bows, which extend from the cut-off sections of the old bows, and by a 1 in. by $\frac{7}{16}$ in. steel channel, bent to fit, and extending the complete width of the body, being flattened on each end and spot-welded to the steel header strip. The channel is placed on the side of the bows so as not to interfere with nailing the covering or lining in place, and is fastened by wood screws spaced 6 in. apart. With this construction, a man can walk on the new

Interior View Looking Forward Showing the Increased Headroom at the Front Entrance

roof without noticeable deflection taking place. The interior, including the roof, is lined with 24 gage sheet iron, carefully nailed to give a smooth finish.

New Dash Installed

The dash of the old model was covered with leatherette and the instruments, including oil lines and wiring were exposed, resulting in an unsightly arrangement. A new metal dash has been built in, with everything removed except the necessary switches and gages, which have been relocated to make them as inconspicuous as possible. The built-in seat extending across the rear end of the coach did not have a cushioned back rest and was too short for comfort. This was replaced with a fully upholstered divan with form-fitting arm rests. Also a two-passenger bench alongside of the driver was removed and a single passenger arm chair installed.

Interior Finish

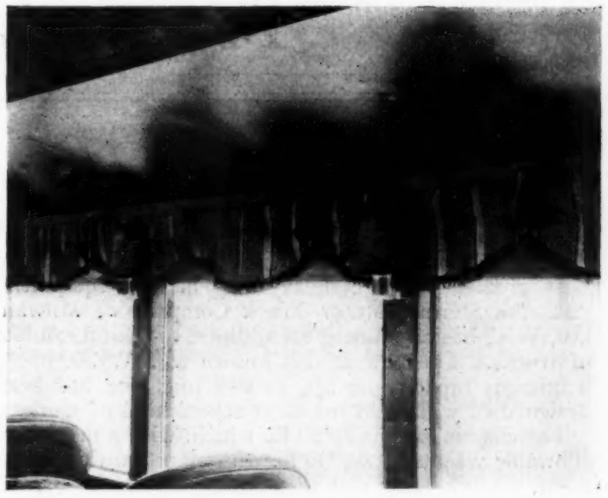
The coach has been refinished inside with a three tone color combination of buff, red and green which has been consistently carried out in every detail. The floor has been recovered with an inlaid linoleum having a red and tan design on a green background and given three coats of transparent lacquer. The interior is finished in buff, with a special mottled effect. The sides below the windows match the leatherette covering of the backs of the seats and the upper sides and roof have occasional red and green modernistic designs. All passenger seats have been recovered with a special grade of velvet plush upholstery, which continues the color motif with a red and green flower design on a buff background. The driver's seat and the backs and sides of the passenger seats are covered with buff colored leatherette. To brighten the interior, a curtain valance in the three tone color combination has been added to each side and rear window. Each window post has an individually controlled electric lamp with an adjustable hand painted shade of buff with a green and red border. All interior hardware has been chromium plated, including the stanchions and railing of the front entrance.

The Lines of the Reconstructed Roof Have Been Carefully Blended with the Body Outline

Decorative Effects

The three tone finish is continued on the exterior with a slight modification. The body is standard New England maroon, dark below the belt and medium above the belt. The roof and window visors are buff, and the front and rear fenders, body moulding and edges of visors are black.

The battery which was formerly placed under the rear cross seat, has been relocated and hung under the floor in a special cradle near the driver's seat.



Individually Controlled Side Lamps with Shades Give Distinction to the Interior

Coach Purchased in 1925

The coach on which the experimental work of this modernization plan was performed is a model Z Pierce Arrow, purchased in 1925, which has covered 200,000 miles in the service of the company. The cost of making the alterations as outlined was approximately $1000, and it is estimated that the coach should be good for another 160,000 miles without further attention to the body beyond that of normal maintenance.

* * *

Along the Boston, Mass.,-Portland, Me., Route of the Boston & Maine

New Equipment

Sterling Adds Heavy-Duty Six Cylinder Truck

TO supply the demand for increased speed and greater power in heavy-duty hauling equipment, the Sterling Motor Truck Company of Milwaukee, Wis., has announced an addition to their 1930 line of trucks. The new model, known as DW 20, has a maximum capacity of 5½ to 6½ tons and has been designed to withstand the most severe kind of work.

The chassis weighs 7,250 lb. which, with a maximum allowable weight of 20,000 lb. with standard tire equipment, gives a body and load rating of 12,750 lbs. It is powered with a husky, six-cylinder, Ricardo head type engine of 4⅜ in. bore and 5⅛ in. stroke, with 462 cu. in. displacement, which develops 88 h.p. at a governed speed of 2000 r.p.m.

The main bearings of the seven bearing crankshaft have a diameter of 3 in. and the connecting rod bearings are 2¾ in. in diameter. The oil pan is of cast aluminum and serves to keep the oil cool under all driving conditions. The engine is supported at three points with flexible connections. A Zenith carburetor is used and magneto ignition with an impulse coupling is furnished, unless electric lights and battery are used, in which case a distributor is installed without the magneto.

A smaller motor may be supplied if desired, which has the same features of design of the larger one. This motor develops 71 h.p. at 2,000 r.p.m. with a bore of 4 in., and a stroke of 4¾ in.

A 20 in. fan operates in conjunction with a tubular radiator which has a chromium plated shell.

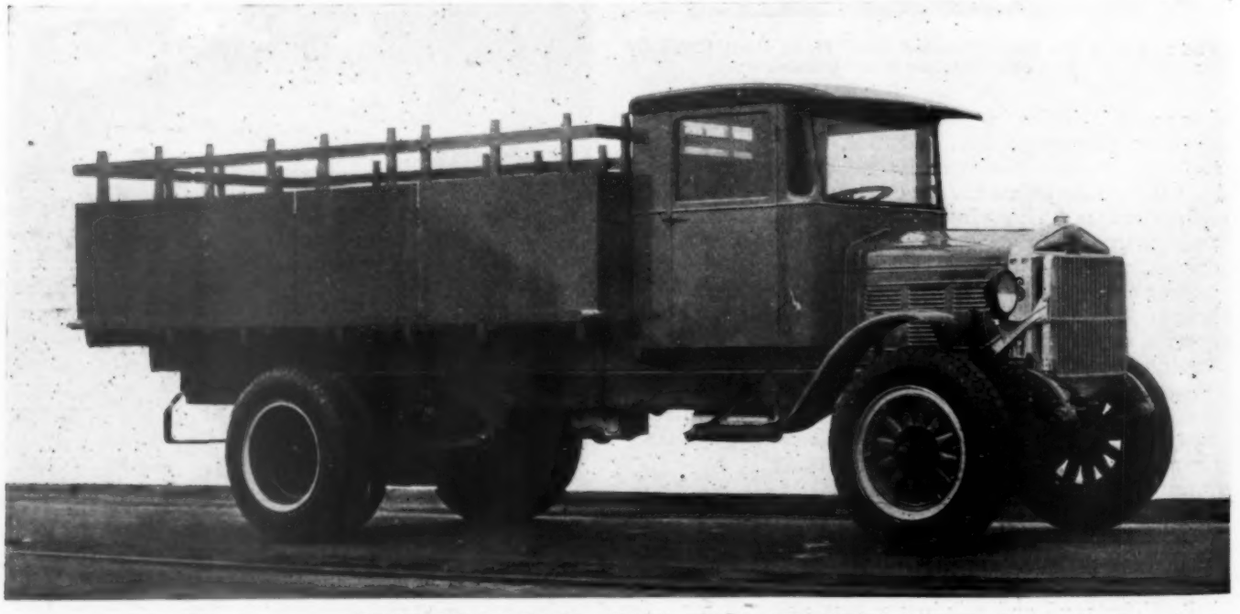
The frame is of special Sterling design, being made of heavy pressed steel and lined with seasoned oak plank. This feature makes it possible to bolt instead of rivet all frame cross members, which it is claimed, not only reduces vibration but makes replacement of frame parts, if necessary, far more simple than with the conventional hot riveted construction. The outside width of the frame is 34 in. and with standard tires and loaded, is 35 in. from the ground.

The front springs are exceptionally long to promote easy riding, the length being 48 in. and the width 3 in. The rear springs are 54 in. long and 3 in. wide and have auxiliary springs. All springs are made of chrome vanadium steel and have sufficient leaves to carry the maximum load. The clutch is a Brown-Lipe multiple disc type with seven pairs of discs. The four speed transmission is mounted amidships on a frame cross member with an auxiliary three speed transmission available where higher road speeds and greater low speed performance is required.

Exceptionally large four wheel hydraulic brakes are used with a vacuum booster to augment the braking pressure. Each front service brake has 67½ sq. in. of contact surface and each rear service brake has 256 sq. in. which, with the hand operated propeller shaft brake of 116 sq. in., gives a total braking surface of 763 sq. in.

One of the main features claimed is the ease of steering which is made possible by the proper slope of the steering wheel and by the cam and lever type steering gear. The cowl, dash and floorboards are made of cast aluminum. All exposed alemite cups are protected from damage.

The front and rear axles are made by the Timken



Model DW-20 Sterling Truck, 174 in. Wheelbase

Detroit Axle Co. The rear axle is the worm drive, full floating type with a reduction of 8.6 to 1 when used with solid tires and 7.8 to 1 for pneumatic tires. The road clearance is 9 in. for both front and rear axles. The wheels have wood spokes and metal felloes. The standard tire equipment is 36 in. by 5 in. solid on front and 36 in. by 10 in. solid on rear; with pneumatic tires, 38 in. by 7 in. single on the front and dual on the rear, available at extra cost.

The road speed with 38 in. pneumatic tires and the 7.8 to 1 reduction is 29 miles per hour and with the 36 in. solid tire equipment and the 8.6 to 1 reduction, 25 miles per hour.

Sterling has also brought out a new 3½ to 4½ ton truck, known as model DB15, which has been designed to render speedy delivery service and to meet congested city traffic conditions.

This model has a 298 cu. in. motor developing 64 h.p. at 2200 r.p.m. and a bevel drive, with a full floating rear axle.

White Develops Medium Capacity Coach Chassis

A NEWLY developed motor coach chassis which incorporates several mechanical refinements has been added to the line of six-cylinder, highway, passenger transportation vehicles of the White Company, Cleveland, O. The new model 65-A will combine all the features of the model 65 and will in addition be of longer wheelbase, have greater seating capacity, heavier frame, springs and axles and larger tires. The allowable gross weight of the chassis, body and load, will be 18,000 lb. A new full-floating rear axle of increased capacity will include provision for either hydraulic or Westinghouse air operated brakes.

The design used on the White six-cylinder model 54-A, 41 passenger coach chassis, to obtain greater seating capacity, has also been incorporated in the model 65-A. The driver is moved forward and the engine is allowed to come through the dash, a neat aluminum housing covering the portion which comes within the body. This feature adds several inches to the length of the chassis without sacrificing safety of control or good appearance.

The engine, clutch and transmission are combined into a unit power plant. The six-cylinder engine has a bore of 4 in. and a stroke of 5¼ in., giving a piston displacement of 396 cu. in. The combustion chambers are machined and the cylinder head, together with the valves and valve operating mechanism, are removable as a unit. Aluminum alloy pistons are used and the seven-bearing crankshaft is statically and dynamically balanced to eliminate vibration. Oil is supplied under pressure to all bearings and to the pistons and cylinders by metered passages. The temperature of the water cooling system is controlled by a thermostat and the cast aluminum radiator shell is supported at three points to eliminate strain.

The single plate clutch operates in oil and the clutch throwout bearing is automatically lubricated. The four speed transmission has wide faced gears made of heat treated alloy steel supported by heavy ball bearings.

The drive is through metal universal joints to the full floating rear axle which has a standard gear ratio of 5.18 to 1 with optional ratios available of 4.75 to 1 and 5.67 to 1.

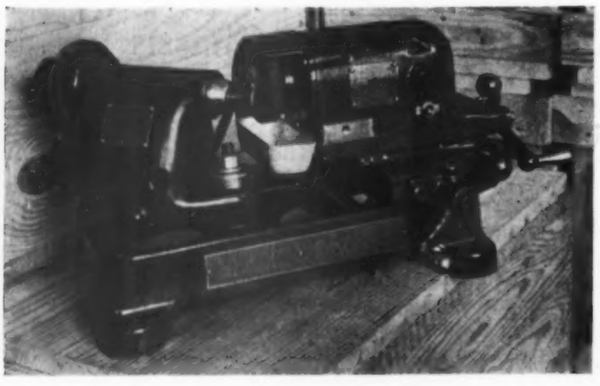
The frame is made of heat treated pressed steel with a double kick-up and has strong reinforcements at the front end. The height of the frame from the ground has been made very low. Four wheel brakes are provided of the internal type, expanding in gun iron drums. Hydraulic shock absorbers are mounted at front and rear. Disc wheels and 38 in. by 9.00 in. balloon pneumatic tires are standard equipment, single on front and dual on rear.

The standard wheelbase is 212 in. and the length of the frame, from the dash, is 246⅝ in.

White Model 65-A Chassis With 25 Passenger De-Luxe Body

Low Priced Valve Grinder Announced by Black & Decker

AN ELECTRIC valve refacer which will take valve stems up to ½-in. in diameter has been recently added to the line of electric garage tools manufactured by Black & Decker, Towson, Md. The workhead is adjustable to reface 30 deg., 45 deg. or 60 deg. valves and a single spring collet accommodates

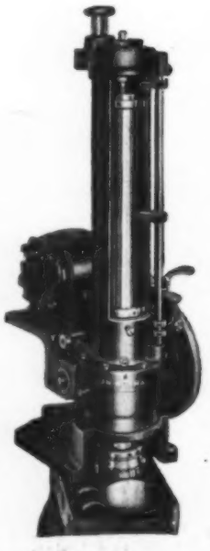


Black & Decker ⅛ in. Electric Valve Refacer

valve stems between 5/16-in. and ½-in. Individual, universal type motors drive the grinding wheel and the workhead spindle which makes for convenience and freedom from attention. The machine is made to operate on 110, 220 or 250 volts.

Standard equipment includes a diamond wheel dressing attachment and a valve-seat reamer grinding fixture, with a gauge to insure grinding the proper relief on the reamer. Attachments are available at small extra cost for grinding rocker arms, breaker points and valve stems.

Van Norman Boring Bar



THE Van Norman Machine Tool Company, Springfield, Mass., have announced a new electric-driven cylinder boring machine which will rebore scored or worn cylinders up to 6 in. in diameter. Important features of this tool are: Two-speed control, automatic return mechanism, a cutter head which is adjustable without removing from the machine and special worm and worm gear drive. The boring bar is $2\frac{3}{16}$ in. in diameter and is supported by double row ball bearings. The tool is designed to be attached to the top of the cylinder block and to operate in a vertical position. The use of high speed steel cutters makes possible heavy feeds and fast operation.

Goodyear Introduces New Balloon Tire

LARGER size and greater load capacity feature the new balloon tires for trucks and motor coaches recently brought out by the Goodyear Tire & Rubber Company, Akron, O. Since their introduction, the performance of balloon tires has been so favorable that a demand has grown for larger sizes. The new tires have been brought out to fill this demand.

Three sizes have been built to fit a 20 in. rim; 12.00-20, 12.75-20 and 13.50-20. The 12.00-20 is inflated to 85 lb. and has a load capacity of 6,700 lbs., the 12.75-20 with 90 lb. pressure is rated to carry 7,700 lbs. and

Three-Ton Tractor With the New Balloon Tire Equipment

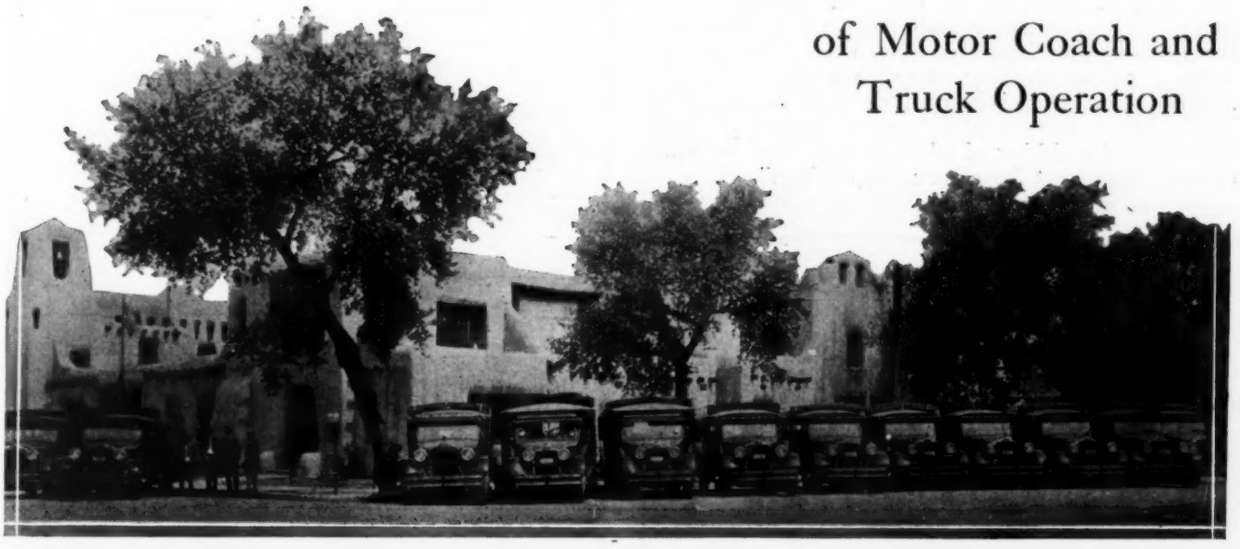
the 13.50-20 with 95 lb. pressure carries 8,800 lbs. The 13.50-20 is the largest tire in regular production, ever made for a truck or motor coach.

The greater efficiency of the balloon tire when compared with the high pressure type is demonstrated by the fact that, with these tires less material will carry more load. The largest high-pressure tire made by Goodyear is the 40 in. by 10 in. which weighs 220 lbs. and carries 5,500 lbs. while the new 12.00-20 weighs only 205 lbs. and carries 6,700 lbs. The lower pressure balloon tire has about 25 per cent greater area of tread in contact with the ground than the high pressure type, resulting in slow and even wear in high speed service and extra cushioning combined with safety from heat blow-outs. The tires are available both as original equipment on trucks up to 5 tons capacity and for changeovers from any other type of tire equipment used on large trucks now in service. A felloe band is furnished to dealers which can be applied to the spoke ends of present equipment by the cut down and weld method.

A spider wheel using the new 11-in. rim is available which can be used to replace Budd disc wheels.

Every-Day Problems

of Motor Coach and Truck Operation



This Month's New Questions

Question No. 18

Trends in Operating Costs

"Do you find that your motor coach operating costs in general are increasing or decreasing? What is your present average cost per mile and what was it a year ago? Please state items included. What factors are responsible for the change if any? Have certain expenses tended to increase while others have decreased? If so, which are going up, and which coming down? What future changes in the level of motor coach operating costs do you anticipate?"

Question No. 19

Keeping Adequate Supplies on Hand

"In operating your stores department, are parts requisitioned from the general stockroom or from local stockrooms at division points? How do you determine your requirements as to the number of spare parts of different kinds to be kept on hand? What system do you employ to insure that your parts on hand will be kept at the standard level? What means have been successfull in reducing stockroom inventories?"

What Is Your Answer?

Reply to Question No. 14

Keeping Motor Coaches Clean

"What is the best practice with respect to the cleaning of motor coaches? What washing system is used, and what liquids are employed for cleaning different parts? How often are the coach exteriors cleaned? How often the chassis parts? How are the interiors cleaned and how often? What washing equipment is provided, and how many coaches can one man take care of?"

Burlington Methods

With our present operation of 35 motor coaches, we find it more practical and economical to use a power pressure washer with lukewarm water. We do not use cleaning fluid of any kind, other than standard grade of polish for the touching up of radiators, lights, etc.

Our motor coaches are being thoroughly cleaned, both the interior and exterior, after each trip. We find that one man can complete one coach per hour depending somewhat on the condition of the highways over which the coach is operated.

F. D. HITE,
General Manager, Burlington Transportation Co.

Santa Fe Methods

Ordinarily, only water is used on the exterior of the coaches, this being sprayed on by the Kellogg high pressure system. However, in cases of extreme greasiness, soap is applied to the body and kerosene to the chassis. Exterior and chassis parts are washed after every trip and the interior is dusted out. Interiors undergo a general cleaning every 2000 miles. We find that one man can satisfactorily clean 12 coaches daily.

The entire responsibility for the proper washing, cleaning and polishing of all equipment is in the hands of the "Equipment Appearance Supervisor."

All equipment must be spotted on wash racks, and taken off racks, by or under the supervision of equipment appearance supervisor. During night hours, the night dispatcher takes over duties of the equipment appearance supervisor, responsibility for the proper handling, washing, etc. of equipment still remaining with the latter, who inspects promptly, on reporting for duty, all equipment handled during night hours.

All equipment must be inspected by the equipment appearance supervisor, or when he is off duty, by night dispatcher or day dispatcher, before washing, when instructions are given to washer as to what is necessary; also when reported as completed by the washer. Complete inspection must be made before an O. K. is given, and the equipment is taken off the rack and spotted. Care is taken that washing is not delayed by the washer waiting on an O. K. before the car is moved.

All equipment, including trucks, must be washed as often as conditions demand, to keep them in properly clean condition. The equipment appearance supervisor is held responsible at all times for the requirement that the appearance and cleanliness of our equipment be kept always up to the highest standard.

All equipment is washed and cleaned according to instructions posted on the wash racks, and the equipment appearance supervisor must satisfy himself thoroughly that these instructions have been carried out before giving his O. K. All equipment must still be inspected by dispatchers before leaving garage, and any defect in cleanliness must be immediately reported to the equipment appearance supervisor, with the request that it be promptly remedied.

This tag must be attached to car in prominent position.

SANTA FE TRANSPORTATION COMPANY

Cleaning and Polishing Report

Date.....

SPEEDOMETER
CAR NO.:..... READING:.....

CLEANING:	O. K.
Roof Lining	
Side Lining	
Door Lining	
Seat Covering	
Hand Grips	
Curtains and Blinds	
Mats and Under Dash	
Seat Covers	

Clean and O. K. each item.

(Signed) .....
Cleaner.

POLISHING:	O. K.
Body	
Fenders	
Wheels	
Bright work—polish with metal cleaner	
Retouch, as follows:	
.....	
.....	
.....	

(Signed) .....
Appearance Supervisor.

CAR NO.:..... DATE:.....

Shop inspection will be completed

..... A. M.
..... P. M. today.

(Signed) .....
Shop Foreman.

Tag Used to Check Thoroughness of Cleaning

S. F. T. CO.

NIGHT GARAGE REPORT

DATE.....

CARS TO BE WASHED:	CHECKED BY:

REPORT:

DATE..... SIGNED.....
Night Attendant

THIS REPORT MUST BE COMPLETED TO SHOW ALL NIGHT OPERATIONS AND DELIVERED TO DISPATCHER'S OFFICE BY 6 A. M. DAILY

Report of Cleaning Done at Night

The dispatcher informs the equipment appearance supervisor twice daily, i.e., 8:00 a.m., and 12 noon, using the form supplied, of all equipment requiring washing. The equipment appearance supervisor O. K.'s this list as cars are washed, returning the list to the dispatcher when the work is completed. This information is also given to the night dispatcher, when he comes on duty, and the latter follows the same procedure, returning the list when the work is completed.

The following instructions are framed and hung in a conspicuous location on wash racks.

Cleaning and Washing Instructions
Cadillacs

1. Blow all dust from canvas on top of car, or in case of open cars, from hood and covering, using air line.
2. Move seats to floor, thoroughly blow out all dust and dirt from inside of car, including all corners, roof and side lining, with air. Replace seats. Any small grease or oil spots should be removed with cleaning fluid. Leather work on open cars should be washed with a damp sponge and saddle soap.
3. Thoroughly clean all floor mats, remove mud by scraping if necessary. Remove grease spots with cleaning fluid.
4. Securely close all windows, being particularly careful that windshield is fully lowered.
5. Loosen dirt on outside of body and under chassis with high pressure hose. Care should be taken that all mud is removed from under parts, such as inside of fenders, etc.
6. Sponge carefully all body work and top of car, using soap or kerosene where necessary. Great care must be taken that body work is not scratched by having grit on the sponge.
7. Dry off all body work with clean chamois, being careful that no grit is on chamois to scratch body work.
8. Clean glass and moulding with sponge and chamois.

Motor Coaches

1. Blow dirt, etc., from canvas on top, by air.
2. Remove all seats to aisle. Blow out all dust and dirt from under seats and from all corners. Replace all seats.
3. Thoroughly sweep out floor, being careful to remove all dirt, etc. Mop floor with clean mop.
4. Thoroughly clean roof and side panelling and dash with damp chamois.
5. Thoroughly wash all leather parts with damp sponge and saddle soap, paying particular attention to corners and under seats. Care must be exercised that leather is not damaged by the use of too much water. Leather must be dried off immediately with dry cloth.
6. Wash outside as per instructions covering Cadillacs.
7. Spray Leinol Pine disinfectant under seats.

Trucks

1. Thoroughly hose down both inside and outside with high pressure hose.
2. Remove all grease or oil spots with kerosene.
3. Dry off with chamois.

FRANK J. HORN,
Superintendent, Santa Fe Transportation Co.

Replies to Question No. 16

Obtaining Competent Mechanics

"Are you able to secure competent mechanics who can be depended upon to turn out the high grade work demanded in motor coach maintenance? Do you train these men yourself, or is previous experience demanded and found adequate? If you train them yourself, of what does the course of training consist? What kinds of previous training and experience have been found most useful? What has been your experience with mechanics fresh out of automobile schools? Does their training help them to become good mechanics?"

Trains Mechanics

From past experience, I would say that we are unable to obtain competent mechanics for motor coach maintenance. At the present time, practically all of our mechanics are first being schooled in our Chicago shops before being transferred to other points. We have always found that they have become quite familiar with the maintenance procedure as outlined here. This, of course, consists of regular service and rebuilding work for mechanics, although electricians, body men and painters are also put through a regular school.

In most cases, we have found that ordinary automobile mechanics make very poor motor coach maintenance men. They are not used to the heavy work which is naturally attendant upon coach maintenance. High grade truck mechanics have made our best men. We have also found that most mechanics taken from outside sources, rather than from large cities, develop into better men.

We have had a number of men from trade schools, and I am sorry to say that their experience has been very unsatisfactory. There are, of course, always exceptions to this rule. It is a general feeling among many men who come from trade schools that they are full-fledged mechanics, and naturally expect to receive just as much money as the men who have been thoroughly developed. We do, however, have some graduates from trade schools who are now developing into first-class mechanics.

W. A. DUVALL,
Manager—Maintenance, Greyhound Lines.

Previous Experience Essential

Our experience has been that hiring mechanics with previous experience is essential. However, in developing efficient mechanics to take care of motor coach repairs, considerable training is necessary to familiarize them with the importance of motor coach maintenance and the turning out of first-class and thorough work. Our policy is to hire mechanics that have had previous experience along automotive lines and to develop them through a series of operations constituting a thorough motor coach inspection.

We start them off on brakes, putting one new man with a thoroughly experienced brake-man who shows him the proper way of taking care of brakes. After this has been accomplished, the new man is put with another mechanic who takes care of drive lines, starting gears and spring mechanism. After he has been schooled thoroughly in the above mentioned classes of work, we feel that he is capable of mastering one of the two jobs. He is then schooled along the lines of proper inspection and maintenance of engines, and as he advances in the various phases of work, he develops into an efficient mechanic, capable of taking care of any work that might develop. This sort of a mechanic takes care of running inspections. We classify our work under running inspections, general inspections, annual overhaul and unit overhaul.

All engines and units are overhauled in a separate department by skilled mechanics who do nothing else but work on engines, transmissions, rear axle assemblies, etc. No mechanic is permitted to make any repairs to electrical systems, and only thoroughly experienced automotive electricians are permitted to work on such units. We have found that by concentrating this work in the hands of two or three experienced electricians, we can eliminate 95 per cent of our electrical trouble. In other words, our experience has been that if men are trained as specialists, we can derive better results and keep our maintenance costs at a minimum.

H. P. MCDONALD,
Superintendent of Automotive Equipment,
Missouri Pacific Transportation Co.

Pacific Transportation Securities Acquires Three Large California Lines

Southern Pacific affiliate purchases Motor Transit, Peninsula Rapid Transit and Pacific Auto Stages Companies

Three important California motor coach lines have been acquired by Pacific Transportation Securities, Inc., the holding company for a large system of motor coach lines, in which the Southern Pacific has a substantial interest. The three companies recently acquired are the Motor Transit Company, the Peninsula Rapid Transit Company and the Pacific Auto Stages Company, all of California. A price of approximately $4,000,000 is reported to have been involved in the purchases including $3,000,000 for the Motor Transit Company lines and $1,000,000 for the lines of the other two companies.

The Motor Transit Company is probably the largest operator of interurban motor coach service in the country. Its lines cover several hundred miles of routes through Los Angeles, Orange, San Bernardino and Riverside counties, in southern California. During 1929, the company carried more than 3,500,000 passengers, and at its Los Angeles terminal there are 980 departures and arrivals of its motor coaches daily.

An indication that the Motor Transit Company's operations will be co-ordinated

Merger Affects Schedules

The merger of the Pacific Stages, Inc., with Oregon Stages, Inc., was effected on January 31. This consolidation has resulted in a number of changes in operating schedules. New schedules became effective on January 31 on runs from Portland, Ore., to Forest Grove, McMinnville, Newberg, Tillamook, Newport and Corvallis.

The merger places under the name of Oregon Stages, Inc., all operations in Oregon of Pacific Stages, Yelloway, Pickwick and Oregon Stages. Oregon Stages is owned by Pacific Transportation Securities, Inc., the holding company in which the Southern Pacific has a substantial interest. R. W. Lemen, as president and general manager of Oregon Stages, will have charge of all motor coach lines controlled by Pacific Transportation Securities in Oregon.

Previously Oregon Stages took over all the routes formerly operated by the Southern Pacific Motor Transport Company. The revised schedules are designed to eliminate "deadhead" runs and to improve the service provided to a number of points on the Oregon Stages routes.

Motor Transit Becomes Greyhound Corporation

The name of the Motor Transit Corporation was changed to Greyhound Corporation by stockholders of the company at a special meeting in Chicago on February 4. Likewise, the name of the Motor Transit Corporation subsidiary, the Motor Transit Management Company, was changed to Greyhound Management Company.

At the same time, the stockholders approved an amendment to the certificate of incorporation, authorizing an increase in the no par common stock from 750,000 shares to 1,000,000 shares.

The Motor Transit Corporation, now the Greyhound Corporation, is the holding company which, with several railways, including the Pennsylvania, the Great Northern and the Southern Pacific, controls the nation-wide motor coach operations of the Greyhound Lines, Pickwick-Greyhound Lines and the Pacific Transportation Securities, Inc.

The above-mentioned increase in stock follows the recent increase in capitalization of the Pickwick Corporation.

to some extent with the rail service of the Pacific Electric Railway is noted in the election of D. W. Pontius, president of the Pacific Electric, as chairman of the board of directors of the Motor Transit Company. T. B. Wilson, who organized the Southern Pacific motor coach services and is now president of Pacific Transportation Securities, has been elected president of the Motor Transit Company. Franklin D. Howell, vice-president and general manager of the Motor Transit Company, will be retained in that capacity.

"Acquisition and control of the Motor Transit Company by the Pacific Transportation Securities, Inc., will permit many operating economies and result in greatly improved service to the traveling public," said Mr. Wilson. The Motor Transit Company will be operated independently and under its own name, as in the past, but economies will be effected by the elimination of duplicate service and the consolidation of terminal facilities.

Harvey Arizona Certificates Transferred to Santa Fe

The application of Fred Harvey to transfer and assign to the Santa Fe Transportation Company certificates held authorizing the operation of motor coaches in the state of Arizona, has been approved by the Arizona Corporation Commission. Approval was also given to the proposal to operate motor coaches between Grand Canyon, Ariz., and Williams, and between the south and north rims of the Grand Canyon, serving Cameron, Tuba City, Rainbow Lodge, Jacob's Lake, Grand Canyon Lodge, and Flagstaff.

Greyhound New York-Chicago Traffic Figures

Motor coaches of the Greyhound Lines operating between Chicago and New York carried 188,980 passengers during January, as compared with 174,509 passengers carried in the same month of 1929. This, of course, includes local as well as through passengers. Gross revenues in January of this year on these lines were $407,517, as compared with $325,643 for the same month last year, the increase being more than 25 per cent. The average revenue per passenger increased from $1.87 to $2.16, in spite of reductions in rates, which indicates that the average distance travelled by each passenger has increased substantially.

La Crosse & Southeastern Seeks Minnesota Permit

A hearing on the application of the La Crosse & Southeastern Transportation Company, subsidiary of the La Crosse & Southeastern, to operate motor coaches between La Crosse, Wis., and Preston, Minn., was held by the Minnesota Railroad and Warehouse Commission on February 20. The hearing was held at Rushford, Minn.

The proposed line will be 59 miles long and will pass through Rushford, Houston and Lanesboro.

N. E. T. Effects Closer Co-ordination with New Haven Train Service

The New England Transportation Company, highway subsidiary of the New York, New Haven & Hartford, has recently effected certain organization changes, designed to co-ordinate more closely its motor coach and motor truck operations with the freight and passenger train services of the parent railroad. The change involves the removal of the New England Providence, R. I., office to New Haven, Conn., and the placing of the subsidiary under the direction of John A. Droege, New York, New Haven & Hartford vice-president and general manager. Furthermore the highway operations of the New England will henceforth be supervised by the New Haven division superintendents where their respective territories are involved.

Under the new set-up the executive offices of the New England will remain at Boston, as in the past, and A. P. Russell, executive vice-president of the New Haven, continues as president of the subsidiary. The officers whose headquarters have been transferred from Providence to New Haven are General Superintendent Henry M. Walker and Assistant Superintendent James A. Cunningham.

The first step in the closer tie-up with the rail operations was announced shortly after the reorganization plan was made public. It involved the placing of H. A. Moynihan, superintendent of the New Haven's Providence division, in charge of all New England Transportation Company motor coaches and motor trucks operating in Rhode Island and parts of Massachusetts and Connecticut. Mr. Moynihan's appointment by Vice-President Droege was made known on February 4 at which time it was also stated that several other division superintendents of the New Haven would assume charge of the subsidiary's motor coaches and motor trucks, operating in their respective territories.

Baltimore & Ohio Train Connection Motor Coach Service Attacked

An investigation by the Interstate Commerce Commission into the Baltimore & Ohio practice of furnishing motor coach transportation for its passengers between points in New York City and its rail terminals in New Jersey, has been asked by the other railroads serving New York. This action was precipitated by a tariff filed by the Pennsylvania, providing for transfer by that road of parties of 25 or more persons traveling together from, to or via New York City.

The New York Central, the Pittsburgh & Lake Erie, the Delaware, Lackawanna & Western, and the Erie protested this Pennsylvania tariff, and at the same time asked for an investigation of the lawfulness of the B. & O. practice.

The Pennsylvania, while holding that its tariff was lawful, stated that it believes that, except for the competitive condition to which it has referred, the proposed privilege should not be granted or extended to the traveling public, and therefore, subject to the initiation of an investigation with respect to the policy of the Baltimore & Ohio, the Pennsylvania would join the applicants in a prayer for the suspension of its own tariff.

The Interstate Commerce Commission on January 31 suspended for seven months, from February 2 to September 2, for investigation, the operation of the Pennsylvania tariff. At the same time the commission postponed consideration of the request that it investigate the service now operated by the B. & O. In connection with the Pennsylvania tariff, the protesting roads claim that the tariff is indefinite and uncertain as to the territory from which it applies and as to the means of conveyance and the meaning of "persons traveling together." They asserted that it "offers free transportation and is therefore illegal" but if it is to be regarded as a part of the rate it is "improperly and illegally published," and that "a tariff so greatly preferential and prejudicial as between localities served by a single system must be illegal. There can be no reason for the preference other than competition. If motor coaches, taxicabs, street cars or subway cars can be supplied at New York by the Pennsylvania Railroad for the free transportation of passengers from Philadelphia and Pittsburgh they can equally be supplied for the free transportation of passengers from Atlantic City, Trenton, Harrisburg, Williamsport and Buffalo."

The protesting roads therefore asked as to whether it is intended to provide train connection motor coach service similar to that provided by the B. & O. and contended, in addition, that the present B. & O. practice is not covered by any tariff on file with the commission, but by a circular issued August 29, 1926. The Pennsylvania denied the foregoing allegations as to its tariff and held that the provision as to persons traveling together means together from point of origin to destination. It conceded that the provisions of the tariff were limited to territory as to which competition with the Baltimore & Ohio is a factor. The Pennsylvania also denied that the tariff provided for free transportation, explaining "it provides for an incidental service available to those who have paid regular tariff charges."

National Association of Motor Bus Operators' Code of Principles

The National Association of Motor Bus Operators has recently adopted a comprehensive code of operating conduct to assure maximum safety, comfort and courtesy for motor coach travelers. It is pointed out in connection with the announcement, that the primary objectives of the code are to secure clean, comfortable and well ventilated motor coaches; trained operators, who are familiar with traffic regulations and imbued with the importance of safety first; assure safe equipment, maintain schedules and make connections for the convenience of passengers.

"With more than 1,500,000,000 people annually using motor coaches," the statement continues, "this new code of operating conduct may be regarded as an added assurance to patrons and to the public generally of the high standards to be maintained in the conduct of this great transportation agency. The code itself is merely a classification of precautions, safeguards and service ideals that the leading bus operators have always attempted to carry out."

The code is set forth as follows:

I—THE MOST IMPORTANT OBLIGATION OF PUBLIC TRANSPORTATION AGENCIES IS SERVICE TO THE PUBLIC.

1—Service requires:

(a) Operation of clean, comfortable, well-maintained equipment; careful, courteous, properly instructed drivers; schedules and routes so laid out as to serve in the best possible manner the largest number of patrons.

II—THE FUNDAMENTAL ELEMENTS OF SERVICE ARE SAFETY, RELIABILITY AND COMFORT.

1—Safety of service requires:

(a) Regular inspection of vehicles to determine fitness for operation. No vehicles should be operated when such fitness is in doubt.

(b) The selection of Operators by standards of physical and mental fitness and their training to know, understand and observe all lawful regulations and courtesies essential to the safe and efficient use of public highways.

(c) Operators to be held responsible for a thorough and complete knowledge and observance of state laws, local ordinances and police regulations governing traffic, speed and use of streets and public highways.

(d) The installation of schedules planned to avoid the necessity of reckless driving, or the use of any speed that is unduly fast or in excess of any legal limit.

2—Reliability of service requires:

(a) The maintenance of proper insurance, or equivalent funds to protect the interests of passengers and property in case of accident.

(b) The provision of adequate schedules and their maintenance with due regard to safety.

(c) The proper care of property of passengers, including lost articles, etc.

3—Comfort of passengers requires:

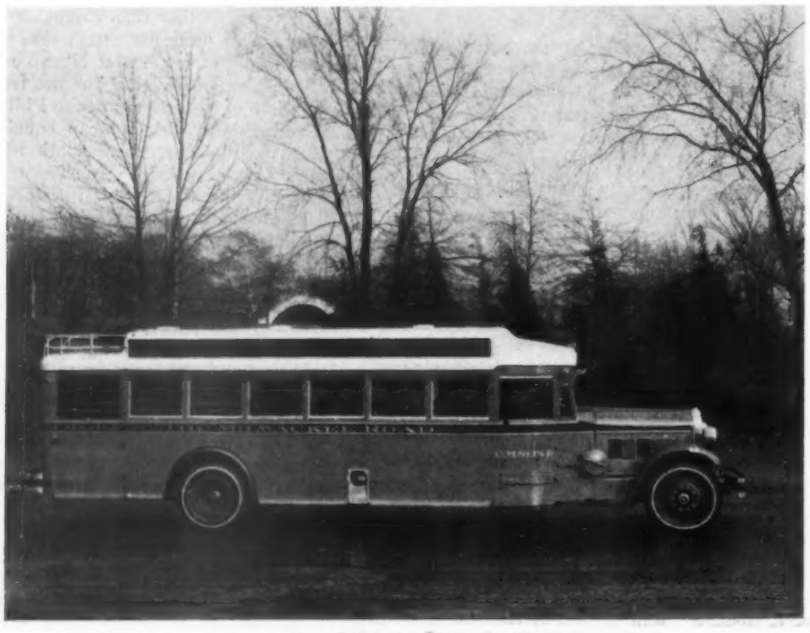
(a) A vehicle properly ventilated, heated and lighted and so designed and constructed that the patrons may ride with the maximum of ease.

(b) Arrangements of schedules with due regard for proper connections with intersecting carriers.

(c) Training of operating forces so as to instill the principle of courtesy to patrons at all times; provide for the giving of all reasonable assistance and the furnishing of information requested when that is possible.

The code is being circulated among all members of the National Association with the recommendation that it be reprinted on cards of suitable size for display in all member company motor coaches and in the waiting rooms of motor coach terminals.

"In reprinting the code," the announcement recommends, "each company should have its name printed underneath the code so that it will tie up with the code preamble reading, 'This Company has joined with the other bus operating company members of the National Association of Motor Bus Operators in subscribing to the following code of principles.'"



Model 54 White Motor Coach on the Milwaukee

M. P. Acquires Independent

Adding another to the long list of independent motor coach lines which it has acquired, the Missouri Pacific Transportation Company has purchased the Wallen Bus Service, operating between Bismarck, Mo., Flat River and Farmington.

Milwaukee Files New Washington Application

The Chicago, Milwaukee, St. Paul & Pacific has filed with the Department of Public Works of the state of Washington an amended application for authority to discontinue its passenger train service between Everett, Wash., and Cedar Falls, and to substitute motor coach service.

U. P. Seeks Colorado Permit

The Interstate Transit Lines, motor coach operating subsidiary of the Union Pacific and the Chicago & North Western, has applied to the Colorado Public Utilities Commission for permission to operate motor coaches between Denver, Colo., Greeley and Sterling.

Pennsylvania Seeks New Lines

The Public Service Commission of Pennsylvania recently held a hearing on the application of the Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, to purchase the rights and franchises of the Cambria Bus Company, the Northern Cambria Bus Company, and the Diamond Bus Company, all operating in North Cambria county.

One of the lines involved, the Diamond Bus Company, has additional rights and franchises extending through to Altoona. The proposed purchase price of the lines was not in evidence at the hearing.

Executive Sessions on Interstate Regulation Bill

The House of Representatives Committee on Interstate and Foreign Commerce, having completed its public hearing on the Parker Bill for the regulation of motor interstate coaches, has since been meeting in executive session for the purpose of determining the final form of the bill.

The National Association of Motor Bus Operators point out in this connection, that while there is no definite information yet available on the views of the committee, it is understood that considerable progress is being made and that a report will be forthcoming at an early date.

South African Developments

The highway service of the South African Railways was extended 258 route miles during the month of December, 1929, according to the General Manager's bulletin No. 144 recently issued. At the same time service from Kakamas to Marchand, which extended over 11 route miles, has been withdrawn.

This net increase of 247 route miles placed the highway route mileage of these railways, as of December 28, 1929, at 11,-

325. In addition there are authorized approximately 1,328 route miles, service over which have not yet been installed.

Extension of Sleeper Service Predicted

Sleeper motor coaches will soon be in operation on the principal motor coach lines throughout the east and middle-west, according to Charles F. Wren, president of the Pickwick Corporation, which manufactures motor coaches of this type in its California factory. The company is completing a $200,000 factory at El Segundo, Cal. Installation of machinery in the factory is nearly completed and production will be started soon, according to Dwight Austin, designer of the Nite-Coach and superintendent of the Pickwick Corporation's body department.

Perishables Trucked Into New York

Receipts of fresh fruits and vegetables by motor trucks at New York City showed an increase during the last six months of 1929 over the corresponding period of 1928, according to statistics published in the January Commerce Bulletin of the Port of New York Authority. These figures relate to the producing areas within 200 miles of the metropolitan market.

From July to December, 1929, a total of 17,834 truck loads were received as against 15,703 received in the corresponding 1928 period. The increase for the second half of 1929 was therefore 2,131 truck loads or 13.6 per cent.

Motor Coach Service Replaces New Haven Trains

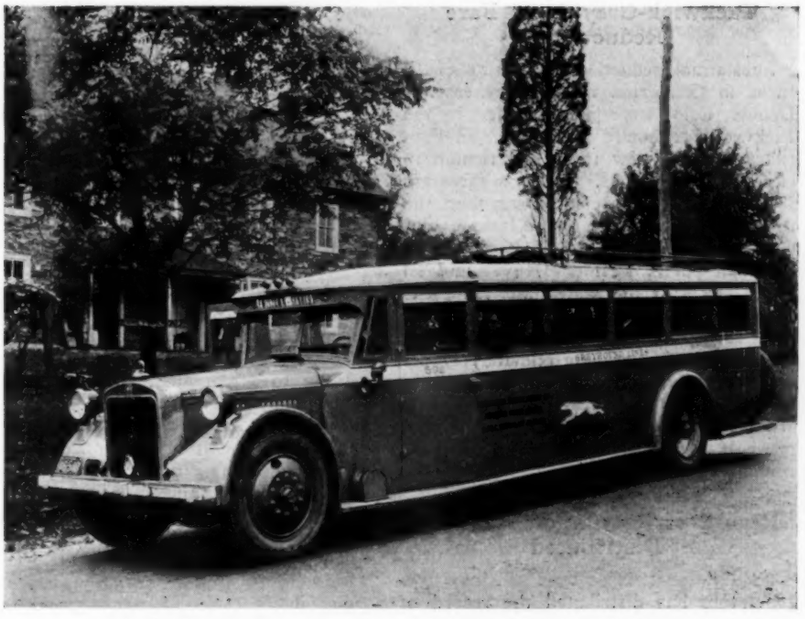
The New England Transportation Company, highway subsidiary of the New York, New Haven & Hartford, on January 27 inaugurated motor coach service between Providence, R. I., and Franklin, Mass. The route was established to supplant New Haven train service which was discontinued between these two points.

One daily round trip is made with motor coaches leaving Franklin at 7.20 a.m. and arriving in Providence at 8.20 a.m. In the return direction, motor coaches leave Providence at 5.30 p.m. and are scheduled to arrive in Franklin at 6:30 p.m. All forms of New Haven railroad tickets are honored on the motor coaches.

Interstate Authorizes $175,000 Improvement Expenditure

The expenditure of approximately $175,000 to improve the facilities and service of the Interstate Coach Company, a subsidiary of Union Pacific Stages, Inc., which is in turn a subsidiary of the Union Pacific System, has been authorized.

Seven new motor coaches will be purchased, and a garage to be used by both the Union Pacific Stages and the Interstate Coach Company will be constructed in Spokane, Wash. Its floor area will be approximately 15,000 sq. ft., and the cost of the structure will be about $35,000. It is expected, also, that two new motor coach stations will be constructed on the system in the Palouse country.



Lewistown-Sunbury, Pa., Coach, Operated by Greyhound for Pennsylvania General Transit Company, P. R. R. Subsidiary

Further Hearings in St. Louis Freight Trucking Case

The Interstate Commerce Commission has assigned for further hearing at St. Louis on March 20 its proceeding involving the transfer of freight and off-track and constructive station delivery at St. Louis and East St. Louis, for the purpose of receiving evidence as to the cost of the various services to be performed in connection with off-track station receipts and delivery, interchange between railroads and in direct deliveries. This is pursuant to the provision for such a hearing made in the commission's report. The hearing will be before Special Examiner H. C. Ames.

Union Pacific and Pickwick Get Iowa Permits

The Interstate Transit Lines, subsidiary of the Union Pacific, and the Pickwick Greyhound Lines have both been granted operating certificates by the Iowa Railroad Commission, permitting them to operate motor coaches in intrastate service over the Lincoln highway between Clinton, Iowa, and Council Bluffs. The permits were issued on condition that neither company shall accept local business between the points now served by existing local motor coach lines. Each may accept passengers at any point for transportation to points not served by the present lines.

Interstate Transit Lines may not transport local passengers between the following points or points intermediate thereto: Ogden and Boone, Ames and Marshalltown and Cedar Rapids, Cedar Rapids and DeWitt, and Wheatland and Clinton.

The Pickwick Greyhound Line may not transport local passengers between the points listed above or points intermediate thereto, and also between Des Moines and Ames, and between several other points.

D. & R. G. W. Would Transfer Subsidiary Permits

The Denver & Rio Grande Western has applied to the Colorado Public Utilities Commission for permission to transfer to one of its subsidiaries, the Rio Grande Motor Way, Inc., all operating certificates now held by another of its motor transport subsidiaries, the Western Slope Motor Way. The Western Slope Motor Way has extensive motor coach and truck operations in western Colorado, while operations of the Rio Grande Motor Way have been confined heretofore to southern Colorado. The present application has as its purpose the consolidation of all motor transport activities of the Denver & Rio Grande Western into one operating company.

U. P. Answers Greyhound Complaint

The Union Pacific has filed with the Interstate Commerce Commission a motion to dismiss the complaint of the Pickwick-Greyhound Lines, Inc., alleging that the railway is violating certain provisions of the Interstate Commerce Act in acquiring and operating motor coach lines. A detailed statement of the complaint, and of the provisions of the law which the Union Pacific is alleged to be violating, was published in the *Motor Transport Section* of January 25, pages 301-3.

The Union Pacific has requested that the commission set a date for oral arguments on its motion. The motion for dismissal of the complaint is based on the contention that the commission is without jurisdiction in the case.

Pickwick-Greyhound Fare Reductions

Substantial reductions in motor coach fares to California from points east of Denver, Colo., were put into effect by the Pickwick-Greyhound Lines, Inc., on February 1. The new rates will remain in effect until March 31. The new fares are from 15 to 25 per cent lower than the regular fares have been, the fares applying between Chicago and St. Louis on the east and points west of Denver and El Paso, Tex. At the same time, the Pickwick-Greyhound Lines established a new basis for a round-trip rate, which involves a rate reduction of approximately 17 per cent. All round-trip rates in the territory served by the Pickwick-Greyhound Lines are computed on the basis of one and one-half times the one-way fare for the round-trip.

Record of Regulation Hearings Distributed

The National Association of Motor Bus Operators has distributed the record of the testimony taken at the recent hearings on interstate motor coach regulation before the committee on interstate and foreign commerce of the House of Representatives. The hearings, held on January 8 and 9, were reported in the *Motor Transport Section* of January 25, page 295.

In connection with the distribution of this record, which is an official printed copy of the transcript, the National Association points out that "the size of the transcript, together with the number and kind of questions asked by the different members of the Committee, will give our members a good indication of the great interest on the part of the House Committee in this new problem of interstate transportation regulation."

Minnesota Motor Coach Statistics

Motor coaches operating in Minnesota carry 4,273,701 passengers and covered 12,607,769 miles in Minnesota in 1929, according to a statement compiled by the Minnesota Railroad and Warehouse Commission. The report shows that 15 companies are operating motor coaches in Minnesota, using 273 pieces of equipment with a total seating capacity of 7,629. These motor coaches are operating over 6,765 miles of highways.

The total investment of these 15 companies is $5,901,298. Their gross revenues in 1929 were $3,677,747, and their operating expenses, not including taxes, were $2,990,188. Registration fees amounted to $170,799, an average of $625.60 per motor coach, or 1.35 cents per motor coach mile operated. Gasoline taxes totalled $69,424, or an average of .55 cents per mile, License fees and gasoline taxes took 6.5 per cent of the gross revenues of the motor coach companies.

Maintenance Headquarters of the Railway Express Agency at New York

Interstate Business Not Taxable by New Jersey

Proceeds received from Interstate business are not subject to the gross receipts tax in the state of New Jersey, according to a recent decision of the U. S. Supreme Court in the case of the New Jersey Bell Telephone Company vs. the State Board of Taxes and Assessment of the State of New Jersey. The case came before the Supreme Court on an appeal from the Court of Errors and Appeals of the State of New Jersey which had affirmed a decision of the Supreme Court of that state to the effect that the law was valid and not repugnant to the commerce clause of the Constitution.

The New Jersey law has for its purpose the taxation of property and franchises of all persons using the public highways or other public places. The state board of taxes and assessments contended that the gross receipts tax is a license fee for the use of public facilities which should be imposed on interstate as well as intrastate commerce.

Seaboard Co-operates With Independent

The Seaboard Air Line through its highway subsidiary, the Motor Transportation Company of the South, has recently entered an agreement with the Blue Bus Line whereby the Seaboard Air Line service between Jacksonville and Tallahassee has been augmented by the Blue Line schedules. Four daily round trips are now made between these points, the motor coaches of the Motor Transportation Company operating three of the trips and the Blue Line operating the fourth.

In connection with the plan, arrangements have been made for honoring all Seaboard tickets for rail journeys between Jacksonville and Tallahassee or intermediate points, on either the motor coaches of the Motor Transportation Company or of those of the Blue Line. In addition, Blue Line tickets will be honored on the motor coaches of the Motor Transportation Company as will tickets of the latter be honored by the Blue Line. Tickets of either highway operating company, however, will not be honored on Seaboard trains.

Carriage of Films by Motor Coaches Banned in Texas

The Texas Railroad Commission has issued an order stating that no motor transportation company in that State shall carry or permit the carriage of moving picture films on passenger carrying vehicles.

The order followed an investigation by the commission of a fire on a motor coach enroute between San Antonio and San Angelo. An explosion of films being carried on the coach is alleged to have caused the fire which resulted in the death of three persons. The commission based its order on the state motor bus rule No. 16, which provides that "no motor transportation company shall knowingly permit to

be carried in a motor vehicle transporting passengers any high explosives, acids, inflammable liquids, loaded guns or other articles which will endanger life or limb."

In its order, the commission said, "It appearing from recent accidents that moving picture films are inflammable and are liable to endanger life, we believe that the carrying of such films by motor buses in Texas is clearly covered and prohibited by Rule 16."

Pacific Electric Would Establish Highway Freight Route

The Pacific Electric Motor Transport Company, subsidiary of the Pacific Electric and of the Southern Pacific, has filed with the California Railroad Commission an application for a certificate of public convenience and necessity for the operation of a motor freight service between San Francisco, Cal., and nearby points, and Santa Cruze.

Heretofore, the transport company has confined itself to an "express" type of operation, consisting of store-door pick-up and delivery in towns and cities by motor truck, the line haul on such shipments being carried out by rail. The present application marks the first departure of the transport company from its present method of operation. If a certificate is granted, the company will establish motor truck freight service on the highways, providing store-door pick-up and delivery service in the same manner as other trucking companies.

The transport company has also solicited bids on four motor truck chassis and two trailer chassis, and on 32 demountable bodies having a capacity up to 10 tons. These will be used for the interchange of l.c.l. inter-line freight between the five freight stations in Los Angeles.

Motor Transport Division Meets June 18-20 at Atlantic City

Notice of the next meeting of the Motor Transport Division of the American Railway Association has been sent out to member-roads by the secretary. The meeting will be held in the new Municipal Auditorium at Atlantic City, N. J., on June 18-20. The session on the first day will be devoted to the consideration of reports of the general committee, the law committee and the rail-motor car section. The session on June 19 has been set aside for the consideration of reports of the motor coach section. The reports of the motor truck section will be presented on the third day of the meeting.

The notice calls attention to the fact that attendance at the meeting is not confined to the voting representatives. "As the work of the division embraces many departments," reads the notice, "it is earnestly hoped that, in addition to the voting representatives, each member-road will send to the meeting such other officers as are interested in the several phases of the work, particularly freight and passenger traffic representatives."

The mechanical division and the purchases and stores division of the American Railway Association are holding annual meetings at Atlantic City at the same time.

N. J. Independent Application Denied

The Board of Public Utility Commissioners of New Jersey recently denied the application of the Westwood Bus Lines, Inc., for the approval of municipal consents to extend its Westwood-Closter-Alpine route to Englewood and to operate five motor coaches thereon.

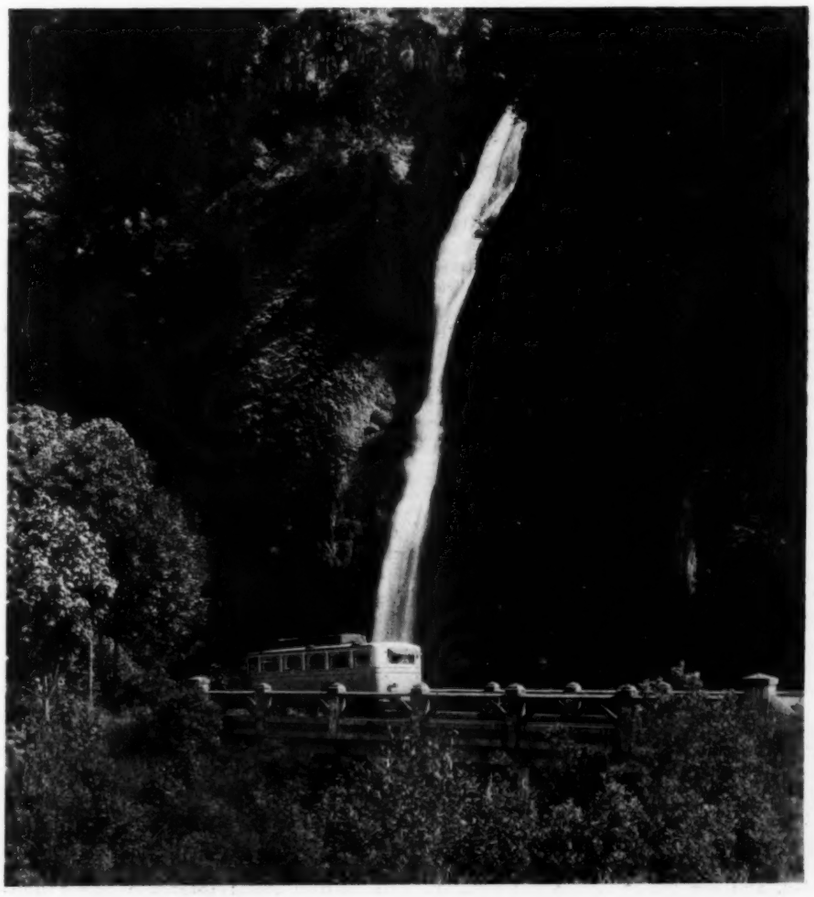
The application was opposed by the Public Service Coordinated Transport, the Jersey Bus Lines, Inc., and the Erie Railroad. The Erie objected to the application and pointed out that it maintains railroad service between Closter, intermediate points and Englewood and that it operates 19 trains a day from Closter to Englewood.

In making its decision, the Board pointed out that the proposed extension would conflict with the existing transportation facilities both as to local and through traffic. If, therefore, restrictions for the protection of these facilities were imposed, it would limit the operation of the applicant's motor coaches to a small and sparsely populated territory. Since the board believed that without the through business between Closter and Englewood there would not be sufficient traffic on the route to make the proposed operation successful, it found that the evidence would not justify an order permitting the extension.

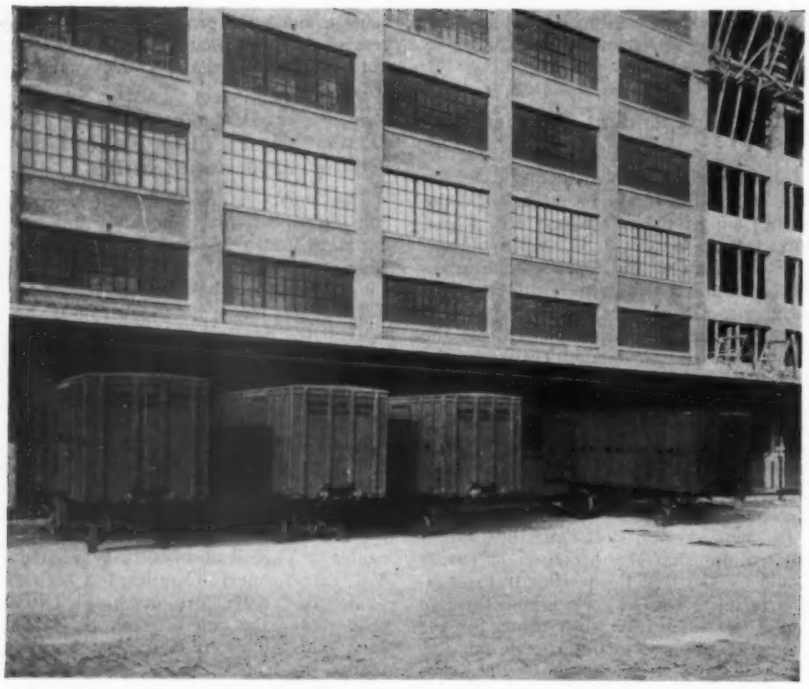
Latest M. P. Time Table Lists 3510 Route Miles

The latest edition of the Missouri Pacific Transportation Company's time table, dated February 15, lists 36 motor coach routes, covering 3,510 route miles. This compares with a listing of 32 routes over 3,296 route miles in the previous time table, dated September 1, 1929. The longest of the new routes is that between Augusta, Ark., and Memphis, Tenn., 93.2 miles. Others are between New Orleans, La., and Ft. Jackson, La., 665 miles, between Newport, Ark., and Bald Knob, Ark., 31 miles, and between Corpus Christi, and Robstown, Tex., 17.8 miles.

In addition to the foregoing new routes, there were several changes in the existing routes. The Kansas City-Warrenburg, Mo., run, formerly 75 miles, has been extended to Sedalia, Mo., making it a 105.3-mile route; the run between St. Joseph, Mo., and Atchison, Kan., has been extended to Topeka, Kan., or from 24.1 miles to 91.6. The run between Pocahontas, Ark., and Memphis, Tenn., has been revised, so that it now covers 97.6 miles, instead of 149.7. Likewise the Little Rock-Texarkana, Ark., route was short-



At Horsetail Falls on a Union Pacific Route Between Pendleton and Portland, Ore.



Enclosed Semi-Trailers of Boston & Maine Transportation Company at B. & M. Freight House A, Boston, Mass.

ened from 170.7 miles to 118.1 miles. Other similar adjustments were made so that in some cases a small number of miles were taken from one route, while in others there are slight additions to the distances covered by the motor coaches.

Alabama Commission Favors Interstate Regulation

Regulation of interstate motor coach lines in the manner contemplated in bills now pending before Congress, was advocated by the Alabama Public Service Commission in its "Review of 1929 and Forecast for 1930," recently issued in Montgomery. While the review considers several other problems of the commission, it nevertheless gives considerable attention to this question of regulating highway carriers.

The following extract from the report relating to this subject of motor coach regulation was published in a recent issue of the United States Daily:—

"Although not the most important part of the commission's work from an economic standpoint, the problem of adequately regulating those engaged in the business of motor bus and truck operations as common carriers has presented many difficult cases to the commission.

"Adequate regulation of this service cannot be enjoyed by the public until Congress has delegated authority to some board or boards for its interstate regulation. Until this is done, Alabama citizens who have invested large sums of money in this business are without protection against their interstate competitors, and the public, while temporarily, perhaps, enjoying this competitive service, will not, in our opinion, in the long run be benefited by this territorial warfare between transcontinental bus operators."

New England Offers to Build Providence Terminal

The New England Transportation Company, highway subsidiary of the New Haven, has offered to build a motor coach terminal on property owned by its parent company adjacent to the Union Station at Providence, R. I., according to recent newspaper reports from that city. The railway subsidiary, the accounts point out, is willing to share the terminal with 10 other companies operating motor coaches out of Providence to various parts of New England.

It further states, that this proposal of the New England may be executed despite the suggestion of the Providence city council that the city appropriate land for a terminal to be used by all motor coach operators who would pay the municipality a rental for such privileges. There has been considerable agitation in Providence for the removal of the motor coach lines from their present terminals in a congested down-town section of the city. The article points out further, in connection with the New England proposal, that the railway subsidiary would not agree to build its terminal until the city agreed to restrict operations of all other motor coach lines within a given radius of the New Haven Railroad station. The operators who would become tenants of the New England Transportation Company's terminal include the following, in addition to its own lines: Interstate Street Railway of North Attleboro, Interstate Limited Motor Coach Company, Union Street Railway, Eastern Massachusetts Street Railway, the Short Lines, Linn's Providence-Worcester Line, Interstate Busses Corporation (Providence-Springfield) Interstate Street Motor Coach Company, Abbott's Boston Line and the Narragansett Pier Railway.

Greyhound Denied Indiana Permit

The Indiana Public Service Commission, in a recent order, disapproved the action of the Greyhound Lines in twice discontinuing motor coach service over routes in that state and then re-establishing the service when applications for the same operation were filed by other companies. The decision was on the application of the Vevay-Cincinnati Bus Company, Inc., for permission to transact intrastate business between Vevay and several towns along the petitioners present interstate route through Indiana. The territory involved was served by the Greyhound Lines and by the Interstate Transit Company, but the commission found upon investigation that the Greyhound Lines on this occasion and in one previous instance had discontinued its morning service between the towns involved, and resumed such service when the Vevay Company filed its application. For this reason the application of the Vevay Company was granted.

Other recent orders of the Indiana Commission were: That authorizing the Nevin Bus Lines to conduct an interstate business through Indiana in connection with a route between Detroit and Chicago; that authorizing the Interstate Transit, Inc., to conduct interstate business through Indiana on routes between Detroit and Chicago, and between Toledo and Chicago; that in which the United States Coach Line of Detroit was authorized to do interstate business from the Michigan-Indiana line to the Indiana-Illinois line via Fort Wayne, Huntington, Anderson, Indianapolis and Terre Haute and a decision authorizing the Flint & Arbor Motor Coach Company of Jackson, Mich. to conduct interstate business over a route between the Michigan-Indiana line and Fort Wayne.

Jersey Central New Jersey Route Restricted

The Board of Public Utility Commissioners of New Jersey, has issued an order supplemental to its recent approval of the municipal consents which had been obtained by the Jersey Central Transportation Company, highway subsidiary of the Central of New Jersey, for the operation of two motor coaches between Lakewood and Toms River, N. J. (see *Motor Transport Section,* January 25, page 318).

The supplemental order is based on a petition of the counsel for the White Way Tours, an objector to the original grant. This company has called the Board's attention to the fact that at the hearing it was agreed that the Jersey Central Transportation Company would accept a restriction on the operation of its motor coaches between Lambert's Corner

and Lakewood, N. J. The Board's decision did not specify this restriction. The decision is therefore amended in the supplemental order, to state that the Jersey Central Transportation Company's motor coaches, should not pick up or discharge passengers who begin or end their journey between Lambert's Corner and Lakewood, N. J., and that motor coaches of the railway subsidiary are to display conspicuous signs indicating this restriction.

Time tables for service over this route have recently been published by the Jersey Central Transportation Company. They list two daily round trips over the entire route between Lakewood and Toms River and two daily round trips between Toms River and Lakehurst. Motor coaches leave Lakewood at 6:45 a. m., and 3:00 p. m. and make the 17-mile run to Toms River in about 40 minutes. In the return direction, coaches leave Toms River at 10:27 a. m., and 6:03 p. m. The trips out of Lakehurst are scheduled at 7:59 a. m., and 4:35 p. m., the former motor coach arriving in Toms River at 8:25 a. m., and the latter at 5:00 p. m. Motor coaches from Toms River for Lakehurst leave at 7:33 a. m. and 4:03 p. m.

Co-ordination on Great Western of Great Britain

The Great Western of Great Britain, since January 1, 1929, when it, along with other British railway companies, received Parliamentary power to operate on the highways, has entered several agreements for the co-ordination of highway freight and passenger service in the territory served by its lines. The first development of this nature was the formation of the National Omnibus Company with a capital of £1,000,000 ($4,870,000) to operate in the western part of England. Since that time the Great Western has acquired a financial interest in practically all important highway transportation companies operating in its territory.

The following tabulation lists these highway lines and indicates the extent to which they cover Great Western territory.

Name of Company	Scope of Operation
Western National Omnibus Co., Ltd.	Great Western road services in Cornwall and Devon. Westbury and Stroud, National Omnibus and Transport Co.'s services, area defined. West Penwith Motor Co.
Western Welsh Omnibus Co., Ltd.	All Great Western highway services in South Wales and Monmouthshire, South Wales Commercial Motors, Ltd., Lewis & James, Ltd., Barretts, Ltd., Cridlands, Ltd., Trescillian Motors, Ltd.
Wrexham & District Transport Co., Ltd.*	All Great Western highway services in Wrexham, Oswestry, Corwon, Delgelley, Pwllholi and Aberystwyth areas. Wrexham and District Transport Co.'s services.
Devon General Omnibus & Touring Co., Ltd.**	All Devon General and Ashcrofts, Paignton, services.

* Name of new company not yet decided.
** Jointly with Southern Railway.

Moreover, a financial interest has been obtained by the Great Western in the Bristol Tramways & Carriage Company, Ltd., and, jointly with the London, Midland & Scottish, negotiations are approaching completion for the acquisition of a 50 per cent interest in the Birmingham & Midland Motor Omnibus Company.

Motor Coaches in New Jersey

The Street Transportation Department of the New Jersey Board of Public Utility Commissioners in a recent survey found that there are at present, operating in New Jersey, approximately 423 intrastate motor coach routes with about 3,330 motor coaches in daily service. The report revealed in addition that approximately 1,250 motor coaches are now used on interstate routes either terminating in or passing through New Jersey. Practically every important highway in the state was found to be covered by motor coach routes extending in a vast network from Sussex county to Cape May.

Commenting on the situation outlined in the foregoing, Leo F. Conlon, senior inspector of traffic, Board of Public Utility Commissioners, said in part as follows:

"The desire of the public to travel by motor coach has been recognized by the large railroad companies. The Central Railroad of New Jersey, the Baltimore & Ohio, and the Reading, directly or through sudsidiaries, are now operating motor coaches in both interstate and intrastate service.

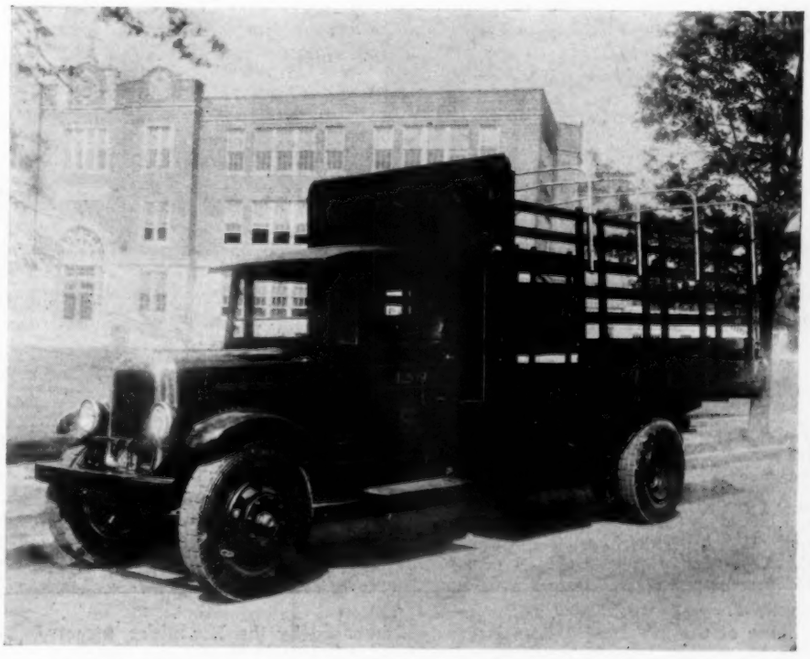
"From a survey of the situation in New Jersey it appears that the intrastate motor coach operation has grown and is continuing to develop through constructive regulation.

"Interstate operation, especially between Camden and Philadelphia, as well as between New York, Jersey City and Newark, is highly competitive, because of the fact that there is no regulation of this service. The Board of Public Utility Commissioners of New Jersey has only limited jurisdiction over interstate motor coach operators. It has no jurisdiction or regulation over the rates of fare, service, number of motor coaches to be operated, &c. In the absence of regulation the competition in many cases has become so keen that it has brought about financial losses, and, in many cases cessation of service. The operation of interstate motor coaches can be placed on a sound financial basis, and can be developed along more economic lines, if some form of Federal control and regulation is adopted. The regulation of interstate motor carriers appears to be a necessity at this time, in so far as it affects New Jersey, at any rate."

"Grandfather Clause" Now Dated January 1, 1930

The House of Representatives Committee on Interstate and Foreign Commerce, which now has under consideration the Parker Bill for the regulation of interstate motor coaches, has decided to make the so called "grandfather clause" of the bill date from January 1, 1930. Prior to the opening of the present session of Congress, the date incorporated in this clause was November 1, 1928; it was then changed to December 2, 1929 and now comes the further advance.

The "grandfather clause" therefore, now provides that any companies, the interstate motor coach operations of which commenced prior to January 1, 1930, and which have been in continuous operation since that date, will receive certificates as a matter of course upon the filing of satisfactory replies to questionnaires designed only to establish the continuity and bona fides of such operations. Operations which have been inaugurated since January 1, however, will have to be defended in hearings for certificates with a complete showing of public convenience and necessity.



General Motors Truck in Service of New England Transportation Company

Orders for Equipment

THE MOTOR TRANSIT MANAGEMENT COMPANY has accepted delivery on two Mack Model BK 33-passenger interstate motor coaches.

THE RIO GRANDE MOTOR WAY, subsidiary of the Denver & Rio Grande Western, has accepted delivery of two Mack Model BK six-cylinder 265-in. wheelbase motor coach chassis.

THE PACIFIC ELECTRIC MOTOR TRANSPORT COMPANY of Los Angeles, Cal., a subsidiary of the Southern Pacific, is asking bids on four motor truck chasses, two trailer chasses and 32 demountable bodies with capacities up to 10 tons.

Among the Manufacturers

Fred P. Helming, of Bristol, Conn., has been appointed sales representative in that territory for the **LeFrance-Republic Sales Corporation.**

George Parks, formerly with the India Tire & Rubber Company, has joined the sales organization of the **Dayton Rubber Manufacturing Company,** Dayton, O., as special representative.

C. W. McKinley, engineer in charge of the **AC Spark Plug Company** oil filter division, has also been appointed chief engineer of the AC experimental engineering department.

Advance reports of the business of the **White Motor Company** in 1929 indicate that the net profit for the year was $2,875,000, as compared with $2,320,000 in 1928. Robert W. Woodruff, president of the company, commenting upon the statement of 1929 performance, said that the figures reveal a continued increase in sales and in profits. The 1929 sales were substantially ahead of 1928, and the business done in December was the second largest for that month in the company's history. Directors of the company have declared a dividend of 50 cents per share, payable March 31 to stockholders of record at the close of business on March 12.

E. D. Sirrine, formerly in charge of the automotive equipment of the Borden Farm Products Company, New York, has been appointed transportation engineer of the **Autocar Company,** with headquarters at Ardmore, Pa. In this capacity Mr. Sirrine will be available to make professional surveys and recommendations concerning transportation problems of any business houses whose operations may require such studies.

The **A.C.F. Motor Company, Ltd.,** has recently been organized as a subsidiary of the American Car & Foundry Company in order to handle the Canadian distribution of A.C.F. motor coaches. The headquarters of the new company are at the Detroit factory of the American Car & Foundry Motors Company, and its officers are: **C. S. Sale** president, and **W. L. Stancliffe** vice-president; **R. S. Hayes** is district manager at Detroit.

Motor Transport Officers

F. D. Everman, has been appointed superintendent of operation of the Peninsula Rapid Transit Company and Pacific Auto Stages, Inc., with headquarters at San Francisco, Cal.

Clayton Lee Bangs, assistant auditor of the Oregon Stages, Inc., subsidiary of the Southern Pacific Motor Transport Company, and also auditor of the Pacific Stages, Inc., has been promoted to the position of auditor of the Oregon Stages, Inc., with headquarters at Portland, Ore. Mr. Bangs was born on February 11, 1891, at Grand Rapids, Mich. He commenced his business career on January, 1913, as a clerk in the office of the auditor of expenditures of the Chicago, Burlington & Quincy, at Chicago. In February, 1920, he became accountant for the United States Railroad Administration at Chicago, and in July, 1925 he was transferred to San Francisco, Cal. Completing his service with the Railroad Administration in January, 1927, Mr. Bangs entered the employ of the Southern Pacific Company in the auditor's office. In December, 1928, he was assigned duty in connection with the acquisition of stage lines in Oregon, and on March 1, 1929, he was appointed assistant auditor of the Oregon Stages, Inc., and auditor of the Pacific Stages, Inc., which position he held until his recent appointment. .

The name of the Pacific Electric Motor Transport Company, highway subsidiary of the Pacific Electric and the Southern Pacific, has been changed to **Pacific Motor Transport Company** following the expansion of its motor truck operations beyond territory served by Pacific Electric lines. **L. B. Young,** manager of the Pacific Electric Motor Transport Company, has been elected vice-president and manager of the Pacific Motor Transport Company, with headquarters at San Francisco and Los Angeles, Cal. **C. C. Collins** has been appointed assistant manager of the Central district with headquarters at San Francisco. **F. J. Mangold** has been appointed assistant manager of the Southern district with headquarters at Los Angeles.

Trade Publication

THE JOHNS-MANVILLE CORPORATION, New York City, has brought out a 69 page Brake Re-Liners Manual which contains considerable information on brakes. Sections of the manual cover, the proper installation of woven and moulded lining; the fundamentals of brake adjustment; how to test brakes for efficiency; brake troubles and their remedy and the cause of squeaking brakes. A description of the automotive products of the company is included.

One of the Six Studebakers Recently Purchased by the Berkshire Street Railway Company, New Haven Subsidiary